



**Prifysgol Cymru**  
Y Drindod Dewi Sant  
**University of Wales**  
Trinity Saint David

**Yr Athrofa**  
Centre for Education  
Addysg i Gymru | Education for Wales



Partneriaeth Dysgu Proffesiynol **Yr Athrofa**  
**Yr Athrofa** Professional Learning Partnership

*Trawsnewid Addysg Gyda'n Gilydd Transforming Teaching Together*

**Dyfnhau Arfer:**  
Mathemateg a Rhifedd

**Deepening Practice:**  
Mathematics and  
Numeracy

**Sesiwn 6**  
**Session 6**



Partneriaeth Dysgu Proffesiynol **Yr Athrofa**  
**Yr Athrofa** Professional Learning Partnership

# **Sesiwn 6 - Sut orau i ddysgu Mathemateg a Rhifedd**

## **Session 6 – How best to teach Mathematics and Numeracy**



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# Mewn adroddiad interim yn 2014 dywedodd ESTYN:

Rhifedd yng nghyfnodau allweddol  
2 a 3: adroddiad interim

Tachwedd 2014

Thematic survey report

- Nid yw medrau rhesymu rhifiadol disgyblion yn ddigon cadarn o hyd
- Dim ond rhyw hanner yr ysgolion sydd wedi datblygu darpariaeth addas ar gyfer rhifedd
- Yn y rhan fwyaf o ysgolion cynradd ac uwchradd, mae'r cynllunio a'r ddarpariaeth ar gyfer rhifedd yn wannach nag ar gyfer llythrennedd
- Yn gyffredinol, nid yw ansawdd marcio gwaith rhifedd disgyblion ar draws y cwricwlwm yn ddigon da

# In an interim report in 2014 ESTYN said:



[Numeracy in key stages 2 and 3 an interim report - November 2014.pdf](#)

- Pupils' numerical reasoning skills are still not robust enough
- Only about half of schools have developed suitable provision for numeracy
- In most primary and secondary schools, the planning and provision for numeracy is weaker than for literacy
- In general, the quality of marking pupils' numeracy work across the curriculum is not good enough

# Asesu, olrhain ac adrodd

## Asesu, olrhain ac adrodd

- 47 Yn gyffredinol, nid yw ansawdd y marcio ar gyfer rhifedd ar draws y cwricwlwm mewn ysgolion cynradd ac uwchradd yn ddigon da. Mewn ychydig o ysgolion, mae athrawon yn defnyddio strategaethau marcio cyffredin ar gyfer gwaith rhifiadol. Yn yr ysgolion hyn, mae dull cyson o farcio mewn meysydd fel gwaith graff yn sicrhau bod gwaith disgyblion yn y maes hwn yn gyson dda ar draws y rhan fwyaf o grwpiau blwyddyn mewn ysgolion cynradd a phynciau mewn ysgolion uwchradd. Fodd bynnag, mae gormod o athrawon nad ydynt yn mynd ati'n rheolaidd i nodi camgymeriadau rhifiadol yng ngwaith y disgyblion mewn pynciau heblaw am fathemateg. Er enghraifft, yng nghyfnod allweddol 2, mae gwaith gwyddonol disgyblion ar rymoedd yn cynnwys camgymeriadau cyfrifo a thalgrynnu, ac nid ydynt wedi'u macio'n gywir neu nid ydynt wedi'u marcio o gwbl. Yng nghyfnod allweddol 3, mewn nifer o weithlyfrau dylunio a thechnoleg, mae disgyblion yn gwneud camgymeriadau dro ar ôl tro wrth drosi rhwng unedau metrig, ac nid yw gwaith marcio'r athrawon yn nodi hyn nac yn rhoi atebion cywir. Mewn ysgolion cynradd ac uwchradd, mae gormod o enghreifftiau o weithiau anghywir sydd naill ai wedi'u marcio yn gywir neu heb eu marcio o gwbl. Hefyd, ar yr achlysuron pan fydd disgyblion yn ceisio llunio casgliadau o weithgareddau rhifiadol, maent yn aml yn ymateb yn anghywir ac nid eir i'r afael â chamsyniadau.
- 48 Dim ond mewn ychydig o ysgolion y mae disgyblion yn cywiro'u gwaith yn gyson. Mewn llawer o ysgolion cynradd ac uwchradd, mae sylwadau athrawon ar sut i wella ansawdd gwaith disgyblion, fel cywiro graddfeydd ar graffiau, yn mynd heb sylw yn aml.
- 49 Megis dechrau cael ei ddatblygu y mae'r gwaith o olrhain medrau rhifedd disgyblion ar draws y cwricwlwm. Mewn ychydig o ysgolion, mae gan bob athro fynediad at wybodaeth ddefnyddiol am gyrhaeddiad disgyblion mewn mathemateg a chanlyniadau o brofion fel y Prawf Rhifedd Cenedlaethol ar gyfer medrau gweithdrefnol. Mae athrawon yn yr ysgolion hyn yn defnyddio'r wybodaeth hon yn briodol i lywio'u cynllunio. Fodd bynnag, o ran olrhain medrau rhifedd disgyblion ar draws y cwricwlwm, mae bron pob ysgol yn ystyried bod hon yn broses gymhleth, ac maent yn mabwysiadu ymagwedd 'aros i weld' yn y gobaith y bydd system genedlaethol yn cael ei datblygu.

# Assessment, tracking and reporting

## Assessment, tracking and reporting

- 47 In general, the quality of marking for numeracy across the curriculum in primary and secondary schools is not good enough. In a few schools, teachers use common marking strategies for numerical work. In these schools, a consistent approach to marking in areas such as graph work ensures that pupils' work in this area is consistently good across most year groups in primary schools and subjects in secondary schools. However, too many teachers do not routinely identify numerical errors in pupils' work in subjects other than in mathematics. For example, in key stage 2, pupils' scientific work on forces have calculation and rounding errors, which are either marked correct or are not marked at all. In key stage 3, in several design and technology workbooks, pupils repeatedly make mistakes converting between metric units, and teachers' marking does not identify this or give correct answers. In primary and secondary schools, there too many examples of incorrect workings either marked as correct or not marked at all. In addition, on the occasions when pupils attempt to draw conclusions from numerical activities, they often respond incorrectly and misconceptions are not addressed.
- 48 Pupils consistently correct their work in only a few schools. In many primary and secondary schools, teachers' comments on how to improve the quality of pupils' work, such as correcting scales on graphs, often go unheeded.
- 49 The tracking of pupils' numeracy skills across the curriculum is at an early stage of development. In a few schools, all teachers have access to useful information on pupils' attainment in mathematics and results from tests such as the National Numeracy Test for procedural skills. Teachers in these schools use this information appropriately to inform their planning. However, in terms of tracking pupils' numeracy skills across the curriculum, nearly all schools consider that this is a complex process and they are taking a 'wait and see' approach in the hope that a national system is developed.

## **Beth yw'r prif wendidau o ran asesu?**

- 1. Asesu ac olrhain medrau rhifedd yn parhau'n wan**
- 2. Diffyg monitro a safoni cyson**
- 3. Ansawdd marcio ac adborth yn ddiffygiol**
- 4. Cysondeb rhwng ysgolion a chyfnodau**
- 5. Datblygu medrau rhesymu**

## **What are the main weaknesses in assessment?**

- 1. Assessment and tracking of numeracy skills remains weak**
- 2. Lack of constant monitoring and standardization**
- 3. Quality of marking and feedback is defective**
- 4. Consistency between schools and periods**
- 5. Developing reasoning skills**

# Beth yw'r 5 Hyfedredd?

Dyma beth sy'n gyrru'r dysgu a'r addysgu

Rhaid cysylltu'r pum hyfedredd yn ein gwersi mathemateg a rhifedd bob tro

Angen archwilio a defnyddio amgylcheddau dan do a thu allan

Cynnig a chysylltu profiadau

Cynnig profiadau er mwyn disgrifio, dehongli, a chyfathrebu o fewn a thu hwnt y dosbarth

# What are the 5 Proficiencies?

This is what drives the teaching and learning

Connect the 5 Proficiencies into our maths and numeracy lessons every time

Indoor and outdoor environments need to be explored and used

Offer and connect experiences

Offer experiences to describe, interpret, and communicate within and beyond the classroom

# Y PUM HYFEDREDD

- esbonio cysyniadau mathemategol, e.e. ar lafar/ trwy ddefnyddio diagram / offer / enghreifftiau neu aneghreifftiau
- cynrychioli cysyniad mewn sawl gwahaniol ffordd, e.e. yn ddiriaethol/ gweledol/ digidol / haniaethol
- gwneud cysylltiadau i gysyniadau a syniadau eraill o fewn mathemateg
- trosglwyddo a defnyddio cysyniad mewn cyd-destunau newydd yn mathemateg, ar draws y cwricwlwm ac o fewn sefyllfaoedd bywyd bob dydd

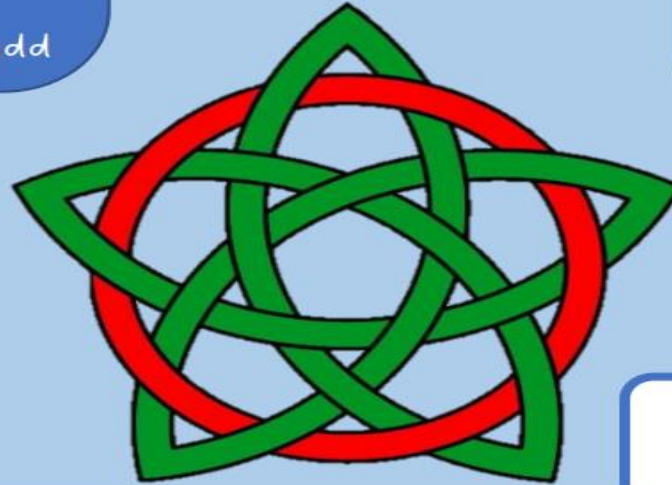
## Dealltwriaeth gysyniadol

## Rhuglder

- cofio feithiau, perthnasoedd a dulliau
- gwybod sut a phryd y mae'n briodol i'w defnyddio yn gywir, yn effeithlon ac yn hyblyg

## Cymhwysedd strategol

- adnabod beth sydd angen i ddatrys problem, e.g. gweithdrefn (+, -, x, ÷), cyfres o gamau a dulliau
- Cymhwyso'r mathemateg sydd ei angen er mwyn datrys y broblem



- esbonio syniadau a phenderfyniadau, e.e. gan ddefnyddio iaith, lluniau, diagramau, nodiadau (jottings) anffurfiol a symbolau, fel bod eraill yn gallu gwneud sens o'r gwaith
- cyfiawnhau a phrofi trwy gynnig rhesymau, darbwylllo a dangos i eraill, e.e. gan symud o esboniadau llafar → cynrychioliadau gweledol neu ddiriaethol → gynrychioliadau haniaethol (symbolau a chonfensiynau)
- gwirio canlyniadau neu ddatrysiadau, e.e. gan amcangyfrif, ystyried pa mor synhwyrol yw datrysiadau, a dehongli atebion yng nghydestun y broblem

## Rhesymu rhesymegol

## Cyfathrebu gan ddefnyddio symbolau

- deall bod symbolau yn gynrychioliadau haniaethol
- dewis a defnyddio nodiant ac amrediad gynyddol o symbolau yn gywir
- mynegi perthnasoedd mewn ffurf cryno, ac mewn ffurf mae pawb yn ei ddeall
- cynnwys unedau mesur priodol

# THE FIVE PROFICIENCIES

- explain mathematical concepts, e.g. verbally/ using diagrams / resources / examples / counter-examples
- represent concepts in different ways, e.g. using verbal / concrete / visual / digital / abstract representations
- make connections to other concepts / ideas within Maths
- transfer and use concepts in new contexts within Maths, across the curriculum and within everyday situations

## Conceptual understanding

- explain ideas and decisions, e.g. using language, pictures, diagrams, informal notes/jottings, and symbols, so that others can make sense of the work
- justify and prove by giving reasons, convincing or showing others, e.g. moving from verbal explanations  $\rightarrow$  visual or concrete representations  $\rightarrow$  abstract representations (symbols and conventions).
- checking results or solutions, e.g. by estimating, deciding whether solutions are reasonable or sensible, interpreting answers in the context of a problem

## Logical reasoning

## Fluency

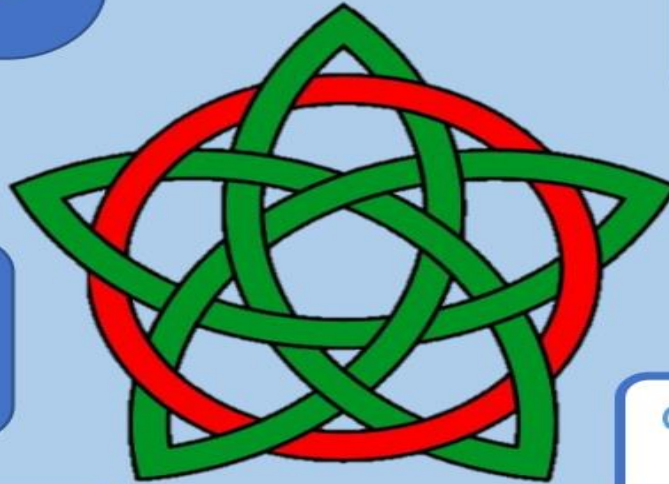
- recall facts, relationships and methods
- know how and when it's appropriate to use them accurately, efficiently and flexibly

## Strategic competence

- identify what is required to solve a problem, e.g. operation ( $+$ ,  $-$ ,  $\times$ ,  $\div$ ), series of steps and methods
- apply the mathematics needed to solve a problem

## Communication using symbols

- understand that symbols are abstract representations
- choose and use notation and an increasing range of symbols correctly
- express relationships concisely, in forms that are universally understood
- include appropriate units of measurement



## Pam defnyddio'r Hyfyddreddau?

Ym Maes Mathemateg a Rhifedd, mae'r model cynnydd yn seiliedig ar ddatblygu pum hyfedredd rhyngddibynnol, a amlinellir isod. Gellir ystyried y rhain fel rhai hydredol a thrawsadrannol. Er mwyn sicrhau cynnydd unrhyw ddysgu mewn mathemateg, dylid datblygu a chysylltu hyfedreddau ar yr un adeg, a dylid eu datblygu dros amser hefyd.

Defnyddiwyd y hyfedreddau rhyngddibynnol canlynol wrth ddatblygu'r disgrifiadau dysgu ac maent yn ganolog i gynnydd ar bob cam o ddysgu mathemateg. Mae rhifedd yn ymwneud â chymhwyso a chysylltu'r hyfedreddau hyn mewn amrywiaeth o gyd-destunau bywyd go iawn, ar draws y cwricwlwm.

## Why use these competencies?

In the Field of Mathematics and Numeracy, the progress model is based on the development of five interdependent competencies, outlined below. These can be considered as longitudinal and cross-sectional. To ensure the progress of any learning in mathematics, competencies should be developed and linked at the same time and should also be developed over time.

The following interdependent competencies were used in the development of the learning descriptions and are central to progress at all stages of mathematics learning. Numeracy is about applying and linking these competencies in a variety of real-life contexts, across the curriculum.

# Y 5 Hyfedredd ar waith...

## The 5 Proficiencies at work...

Solving Linear Equations

$$4x + 3 = 2x + 9$$
$$4x - 2x = 9 - 3$$
$$2x = 6$$
$$x = 3$$

|                          |                            |                      |                   |         |
|--------------------------|----------------------------|----------------------|-------------------|---------|
| Conceptual Understanding | Communication with Symbols | Strategic Competence | Logical Reasoning | Fluency |
|--------------------------|----------------------------|----------------------|-------------------|---------|



| Rhifedd           |                                  | Meithrin                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Dosbarth derbyn       | Blwyddyn 1            | Blwyddyn 2            |
|-------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|
| Y Cyfnod Sylfaen  |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |                       |                       |
| nau               | Elfennau                         | Mae dysgwyr yn gallu:                                                                                                                                                                                                                                                                                                                                                                                                                                        | Mae dysgwyr yn gallu: | Mae dysgwyr yn gallu: | Mae dysgwyr yn gallu: |
| ygu<br>ymu<br>dol | Adnabod prosesau a chysylltiadau | <ul style="list-style-type: none"><li>trosglwyddo sgiliau mathemategol i weithgareddau chwarae a'r ystafell ddosbarth</li><li>adnabod camau i gwbilhau'r dasg neu gymraedd datrysiaid</li><li>dewis mathemateg a thechnegau priodol i'w defnyddio</li><li>dewis a defnyddio ffeithiau rhif a strategaethau meddwl perthnasol</li><li>dewis cyfarpar ac adnoddau priodol</li><li>defnyddio gwybodaeth a phroffad ymarferol yn sail wrth amcangyfrif</li></ul> |                       |                       |                       |
|                   | Cynrychioli a chyfathrebu        | <ul style="list-style-type: none"><li>defnyddio ieithwedd arferol ac ieithwedd fathemategol i siarad am eu syniadau a'u dewisiadau eu hunain</li><li>cyflwyno'u gwaith ar lafar, ar ffurf llun ac yn ysgrifenedig, a defnyddio amrywiaeth o ffyrdd i gyflwyno data a gasglwyd</li><li>dylunio a mireinio dulliau anffurfiol, personol o gofnodi, gan symud tuag at ddefnyddio geiriau a symbolau mewn brawddegau rhif</li></ul>                              |                       |                       |                       |
|                   | Adolygu                          | <ul style="list-style-type: none"><li>defnyddio strategaethau gwirio i benderfynu a yw atebion yn rhesymol</li><li>dehongli atebion yng nghyd-destun y problem ac ystyried a yw atebion yn synhwyrol</li><li>dehongli gwybodaeth a gyflwynir ar ffurf siartiau a diagramau a dod i gasgliadau priodol</li></ul>                                                                                                                                              |                       |                       |                       |

|                |                                                       |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ddio<br>u rhif | Defnyddio ffeithiau rhif a'r berthynas rhwng rhifau   | <ul style="list-style-type: none"><li>cyfrif hyd at 5 gwrthrych yn ddibynadwy</li><li>adnabod y rhifau 0 i 5 a chysylltu'r rhif â'r nifer perthnasol</li><li>cymharu a rhoi rhifau yn eu trefn hyd at 5 o leiaf</li></ul> | <ul style="list-style-type: none"><li>cyfrif hyd at 10 o wrthrychau'n ddibynadwy</li><li>darllen ac ysgrifennu rhifau hyd at 10 o leiaf</li><li>cymharu a rhoi rhifau yn eu trefn hyd at 10 o leiaf</li></ul>                                                                                                          | <ul style="list-style-type: none"><li>cyfrif hyd at 20 o wrthrychau'n ddibynadwy</li><li>darllen ac ysgrifennu rhifau hyd at 20 o leiaf</li><li>cymharu a rhoi rhifau yn eu trefn hyd at 20 o leiaf</li><li>defnyddio ffeithiau rhif o fewn 10, h.y.:<ul style="list-style-type: none"><li>– dyblu a haneru, e.e. 4 + 4</li><li>– bondiau o 10, e.e. 6 + 4</li></ul></li></ul> | <ul style="list-style-type: none"><li>cyfrif setiau o wrthrychau drwy eu rhoi mewn grwpiau 10</li><li>darllen ac ysgrifennu rhifau hyd at 100</li><li>cymharu a rhoi rhifau 2 ddigid mewn trefn</li><li>galw i gof ffeithiau rhif hyd at 10, er mwyn deillio ffeith h.y.:<ul style="list-style-type: none"><li>– dyblu a haneru, e.e. <i>cyfrifo 40 + 40 drwy wybod 4 + 4</i></li><li>– bondiau o 10, e.e. <i>cyfrifo 60 + 40 drwy wybod 6 + 4</i></li></ul></li><li>galw i gof dablau lluosu 2, 5 a 10 a'u defnyddio</li><li>canfod haneri a chwarteri mewn sefyllfaoedd ymarferol</li></ul> |
|                | Ffrasiynau, degolion, canrannau a chymhareb           |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | Cyfrifo gan ddefnyddio dulliau meddwl ac ysgrifenedig | <ul style="list-style-type: none"><li>deall a defnyddio'r cysyniad o 'un arall' wrth chwarae</li><li>deall a defnyddio'r cysyniad o 'un yn llai' wrth chwarae</li></ul>                                                   | <ul style="list-style-type: none"><li>cyfno dau grŵp o wrthrychau er mwyn canfod 'faint sydd yn y gyfan gwbli'?</li><li>tynnu gwrthrychau i flwrdd er mwyn canfod 'faint sydd ar ôl'?</li></ul>                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | Amcangyfrif a gwirio                                  |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ddio<br>u rhif | Rheoli arian                                          | <ul style="list-style-type: none"><li>dangos ymwybyddiaeth o bwrpas arian drwy chwarae rôl</li></ul>                                                                                                                      | <ul style="list-style-type: none"><li>defnyddio darnau arian 1c, 2c, 5c a 10c i dalu am eitemau</li></ul>                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | Hyd, pwysau/màs, cynhwysedd                           | <ul style="list-style-type: none"><li>cymharu, didoli a rhoi trefn ar ddau wrthrych neu fwy ar sail maint, pwysau neu cynhwysedd drwy arsylwi'n uniongyrchol</li></ul>                                                    | <ul style="list-style-type: none"><li>defnyddio'r cymariaethau canlynol yn uniongyrchol:<ul style="list-style-type: none"><li>– hyd, uchder a phellter, e.e. <i>hirach/byrrach na</i></li><li>– pwysau/màs, e.e. <i>trwmach/gysgwrach na</i></li><li>– cynhwysedd, e.e. <i>yn dal mwy/yllai na</i></li></ul></li></ul> |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | Amser                                                 | <ul style="list-style-type: none"><li>rhagweld elfennau o drefn ddyddiol a defnyddio'r termau 'cyn' ac 'ar ôl'</li></ul>                                                                                                  | <ul style="list-style-type: none"><li>dangos dealltwriaeth cynyddol o ba mor hir y mae tasgau a gweithgareddau beunyddol yn eu cymryd</li><li>defnyddio'r cysyniad o amser mewn perthynas â'u gweithgareddau bob dydd</li></ul>                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Rhifedd                     |                                                       | Blwyddyn 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Blwyddyn 4                                                                                                                                                                                                                                                                                                                                                                                                                                           | Blwyddyn 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Blwyddyn 6                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cyfnod Allweddol 2          |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| Llinynnau                   | Elfennau                                              | Mae dysgwyr yn gallu:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Mae dysgwyr yn gallu:                                                                                                                                                                                                                                                                                                                                                                                                                                | Mae dysgwyr yn gallu:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Mae dysgwyr yn gallu:                                                                                                                                                                                                                                                                                                                       |
| Datblygu ymresymu rhifyddol | Adnabod prosesau a chysylltiadau                      | <ul style="list-style-type: none"><li>trosglwyddo sgiliau mathemategol i amrywiaeth o gyd-destunau a sefyllfaoedd bob dydd</li><li>adnabod y camau a'r wybodaeth brodol sydd eu hangen er mwyn cwblhau'r dasg neu gymraedd datrysiaid</li><li>dewis mathemateg a thechneg briodol i'w defnyddio</li><li>dewis a defnyddio offer ac unedau mesur addas</li><li>dewis strategaeth ffeidwl neu ysgrifenedig briodol a gwybod pryd mae'n briodol defnyddio cyfrifiannell</li><li>amcangyfrif a delweddau maint wrth leuar a defnyddio'r unedau cywir</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                             |
|                             | Cynrychioli a chyfathrebu                             | <ul style="list-style-type: none"><li>eguro canlyniadau a gweithdrefnau'n glir drwy ddefnyddio ieithwedd fathemategol</li><li>mireinio dulliau anffurfiol o gofnodi cyfrifiadau ysgrifenedig, gan symud i ddulliau cyfrifo ffurfiol pan fyddant wedi datblygu digon i wneud hynny</li></ul>                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                             |
|                             | Adolygu                                               | <ul style="list-style-type: none"><li>dewis o beth ystod gynyddol o strategaethau gwirio er mwyn penderfynu a yw atebion yn rhesymol</li><li>dehongli atebion yng nghyd-destun y problem ac ystyried a yw'r atebion yn synhwyrol, gan gynnwys dangosyddion cyfrifiannell, analog a digidol</li><li>defnyddio data i ddog i gasgliadau, a chydabod y gall rhai casgliadau fod yn gamgwneidol neu'n ansicr</li></ul>                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| Defnyddio sgiliau rhif      | Defnyddio ffeithiau rhif a'r berthynas rhwng rhif     | <ul style="list-style-type: none"><li>darllen ac ysgrifennu rhifau hyd at 1000</li><li>cymharu ac amcangyfrif gyda rhifau hyd at 100</li><li>defnyddio strategaethau meddwl i alw ffeithiau rhif i gol o fewn 20</li><li>galw tablau lluosu 2, 3, 4, 5 a 10 i gol a'u defnyddio i datrys problemau rhanu</li><li>lluosu rhifau â 10</li></ul>                                                                                                                                                                                                              | <ul style="list-style-type: none"><li>darllen ac ysgrifennu rhifau hyd at 10 000</li><li>cymharu ac amcangyfrif gyda rhifau hyd at 1000</li><li>defnyddio strategaethau meddwl i alw tablau lluosu 2, 3, 4, 5, 6 a 10 i gol a'u defnyddio i datrys problemau rhanu</li><li>lluosu a rhanu rhifau â 10 a 100</li></ul>                                                                                                                                | <ul style="list-style-type: none"><li>darllen ac ysgrifennu rhifau hyd at 100 000</li><li>cymharu degolion 1 lle degol a 2 lle degol</li><li>defnyddio strategaethau meddwl i alw tablau lluosu 2, 3, 4, 5, 6, 8 a 10 i gol a'u defnyddio i datrys problemau rhanu</li><li>lluosu a rhanu rhifau a degolion â 10 a 100</li></ul>                                                                                                                                                                                                                           | <ul style="list-style-type: none"><li>darllen ac ysgrifennu rhifau hyd at 1 miliwn a rhifau i 3 lle degol</li><li>defnyddio strategaethau meddwl i alw tablau lluosu i gol hyd at 10 x 10 a'u defnyddio i datrys problemau rhanu</li><li>lluosu rhifau a degolion â lluosirfau 10, e.e. 15 x 30, 1.4cm x 20</li></ul>                       |
|                             | Ffrasiynau, degolion, canrannau a chymhareb           | <ul style="list-style-type: none"><li>defnyddio haneri a chwarteri</li><li>haneru rhifau 2 ddigid yng nghyd-destun rhif, arian a mesuriadau</li><li>canfod symiau ffracsiwn yn gysylltiedig â'r ffeithiau sy'n hydsys am lluosu, e.e. <math>\frac{1}{2}</math> o <math>\frac{18}{10}</math>, <math>\frac{1}{5}</math> o <math>\frac{15}{10}</math></li></ul>                                                                                                                                                                                               | <ul style="list-style-type: none"><li>haneru rhifau 3 ddigid yng nghyd-destun rhif, arian a mesuriadau</li><li>canfod symiau ffracsiwn drwy ddefnyddio ffeithiau hysbys am dablau, e.e. <math>\frac{1}{6}</math> o <math>\frac{30}{100}</math></li><li>adnabod mai amryw o rannau sy'n creu rhif cyfan yw ffracsiynau, e.e. <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math></li></ul>                                                             | <ul style="list-style-type: none"><li>defnyddio'r ddalltwriaeth o gwerthoedd ffracsiynau a degolion syml wrth leuar a chyfrifo, e.e. <math>\frac{1}{2}</math> o <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math> o <math>\frac{1}{3}</math></li><li>cyfrifo symiau ffracsiwn, e.e. <math>\frac{1}{2}</math> o <math>\frac{1}{2}</math> + <math>\frac{1}{3}</math> o <math>\frac{1}{3}</math> = <math>\frac{5}{6}</math></li><li>cyfrifo symiau canrannol yn seiliedig ar 10%, e.e. 20%, 5%, 15%</li><li>defnyddio cymhareb a chyfrannmedd syml</li></ul> | <ul style="list-style-type: none"><li>defnyddio'r ddalltwriaeth o gwerthoedd ffracsiynau, degolion a charannau syml, e.e. canfod 25% o 60cm a gwybod bod hyn yn gyfnewid â <math>\frac{1}{4}</math> o 60cm</li><li>cyfrifo symiau canrannol yn seiliedig ar 10%, e.e. 20%, 5%, 15%</li><li>defnyddio cymhareb a chyfrannmedd syml</li></ul> |
|                             | Cyfrifo gan ddefnyddio dulliau meddwl ac ysgrifenedig | <ul style="list-style-type: none"><li>canfod gwahaniaethau o fewn 100</li><li>defnyddio strategaethau meddwl i adio a thynnu rhifau 2 ddigid</li><li>dosraniennu er mwyn dyblu a haneru rhifau 2 ddigid</li></ul>                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"><li>canfod gwahaniaethau o fewn 1000</li><li>adio rhif 2 ddigid at, neu dynnu rhif 2 ddigid o, rhif 3 ddigid drwy ddefnyddio dull meddwl neu ysgrifenedig priodol</li><li>defnyddio strategaethau meddwl i luosi a rhanu rhifau 2 ddigid â rhif 1 digid</li></ul>                                                                                                                                                  | <ul style="list-style-type: none"><li>canfod gwahaniaethau rhwng rhifau ag 1 lle degol</li><li>adio a thynnu rhifau 3 ddigid drwy ddefnyddio dull meddwl neu ysgrifenedig priodol</li><li>lluosu a rhanu rhifau 3 ddigid â rhif 1 digid</li></ul>                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"><li>adio a thynnu rhifau drwy ddefnyddio rhifau cyfan a degolion</li><li>lluosu rhifau 2 a 3 ddigid â rhif 2 ddigid</li><li>ranu rhifau 3 ddigid â rhif 2 ddigid</li></ul>                                                                                                                                |
|                             | Amcangyfrif a gwirio                                  | <ul style="list-style-type: none"><li>defnyddio adio i wirio tynnu</li><li>defnyddio dyblu i wirio haneru</li><li>defnyddio adio droen i wirio lluosu</li></ul>                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>gwirio atebion drwy ddefnyddio gweithredaua gwrthdro</li><li>amcangyfrif drwy dalgrynnu i'r 10 neu'r 100 agosaf</li></ul>                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>gwirio atebion drwy ddefnyddio gweithredaua gwrthdro</li><li>amcangyfrif drwy dalgrynnu i'r 10, y 100 neu'r 1000 agosaf</li></ul>                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"><li>gwirio atebion drwy ddefnyddio gweithredaua gwrthdro</li><li>amcangyfrif drwy dalgrynnu i'r 10, y 100, y 1000 neu'r rhif cyfan agosaf</li></ul>                                                                                                                                                       |
| Defnyddio sgiliau mesur     | Rheoli arian                                          | <ul style="list-style-type: none"><li>defnyddio arian i dalu am eitemau hyd at £10 a chyfrifo'r newid</li><li>rhof eitemau yn eu trefn a'u cymharu hyd at £100</li><li>adio a thynnu cyfansymiau lai na £10 drwy ddefnyddio'r nodiant cywir, e.e. £0.85 – £2.76</li><li>rheoli arian, cymharu costau rhwng adwerthwyr gwahanol a phenderfynu beth y gellir ei brynu o fewn cyllidde benodedig</li></ul>                                                                                                                                                    | <ul style="list-style-type: none"><li>cymharu a rhoi eitemau mewn trefn o ran cost, hyd at £1000</li><li>adio a thynnu cyfansymiau lai na £100 drwy ddefnyddio'r nodiant cywir, e.e. £28.18 + £33.45</li><li>cynllunio ac ohanu arian a chyfeirio drwy gadv colnodion cywir</li><li>deall bod cylliddeu yn bwysig</li></ul>                                                                                                                          | <ul style="list-style-type: none"><li>cymharu a rhoi eitemau mewn trefn o ran cost, hyd at £1000</li><li>adio a thynnu cyfansymiau lai na £100 drwy ddefnyddio'r nodiant cywir, e.e. £28.18 + £33.45</li><li>cynllunio ac ohanu arian a chyfeirio drwy gadv colnodion cywir</li><li>deall bod cylliddeu yn bwysig</li></ul>                                                                                                                                                                                                                                | <ul style="list-style-type: none"><li>defnyddio'r termau elw a chollod mewn gweithgareddau prynu a gwerthu a gweud cyfrifiadau syml ar gyfer hyn</li><li>deall y mantision a'r anfantision sy'n gysylltiedig â defnyddio cyfrifon banc</li><li>cymharu prisiau a deall beth sy'n cynnig y gwerth gorau am arian</li></ul>                   |
|                             | Hyd, pwysau/màs, cynhwysedd                           | <ul style="list-style-type: none"><li>adnabod mai perimedd yw'r peltter o amgylch siâp</li><li>defnyddio unedau mesur safonol</li><li>– hyd: mesur ar ben mesur i'r <math>\frac{1}{2}</math> cm agosaf</li><li>– pwysau/màs: defnyddio pwysau 5g, 10g a 100g</li><li>– cynhwysedd: defnyddio litrau a haneri litrau; mesur i'r 100ml agosaf</li></ul>                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>mesur a chyfrifo perimeddau sgwariu a phetysalau</li><li>defnyddio pren mesur i leuar i'r mm agosaf a cholodi drwy ddefnyddio cnygysedd o unedau, e.e. 1cm 3mm</li><li>defnyddio corionau â rhaniadau i bwysio gwrthrychau i'r 5g, 10g, 25g neu'r 100g agosaf</li><li>mesur cynhwyseddau i'r 50ml neu'r 100ml agosaf</li><li>troi unedau o hyd metrig yn unedau lai, e.e. cm yn mm, m yn cm, km yn m</li></ul> | <ul style="list-style-type: none"><li>mesur perimeddau</li><li>defnyddio offer mesur â rhannau 10 hafal rhwng pob brif uned, a cholodi drwy ddefnyddio nodiant degol, e.e. 4.2cm, 1.3kg</li><li>defnyddio trawnewidiadau, e.e. <math>\frac{1}{2}</math> km = 250m</li></ul>                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"><li>darllen a dehongli corionau neu raniadau ar amrywiaeth o offer mesur</li><li>colodi mesuriadau mewn ffyrdd gwahanol, e.e. 1.3kg = 1kg 300g</li><li>defnyddio ieithwedd unedau imperial a defnyddio yn feunyddol, e.e. millitroedd, pentau</li></ul>                                                   |
|                             | Amser                                                 | <ul style="list-style-type: none"><li>dweud faint o'r gloch yw hi i'r 5 munud agosaf ar gloch analog a</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"><li>dweud faint o'r gloch yw hi i'r funud agosaf ar gloch analog a</li></ul>                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"><li>darllen a defnyddio clociau analog a digidol</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"><li>defnyddio a dehongli amserleni a rhestrau er mwyn cynllunio</li></ul>                                                                                                                                                                                                                                 |

# Y Fframwaith Rhifedd



Prifysgol Cymru  
Y Drindod Dewi Sant  
University of Wales  
Trinity Saint David

Yr Athrofa  
Centre for Education  
Addysg i Gymru | Education for Wales

| Numeracy<br>Foundation Phase               | Nursery                                                                                                                                                                                                                                                                                                                                                                                                                               | Reception                                                                                                                                                                                                                                                                                         | Year 1                                                                                                                                                                                                                                                                                                                                                             | Year 2                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elements                                   | <b>Learners are able to:</b>                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Learners are able to:</b>                                                                                                                                                                                                                                                                      | <b>Learners are able to:</b>                                                                                                                                                                                                                                                                                                                                       | <b>Learners are able to:</b>                                                                                                                                                                                                                                                                                                               |
| Identify processes and connections         | <ul style="list-style-type: none"><li>transfer mathematical skills to play and classroom activities</li><li>identify steps to complete the task or reach a solution</li><li>select appropriate mathematics and techniques to use</li><li>select and use relevant number facts and mental strategies</li><li>select appropriate equipment and resources</li><li>use knowledge and practical experience to inform estimations</li></ul> |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                            |
| Represent and communicate                  | <ul style="list-style-type: none"><li>use everyday and mathematical language to talk about their own ideas and choices</li><li>present work orally, pictorially and in written form, and use a variety of ways to represent collected data</li><li>devise and refine informal, personal methods of recording, moving to using words and symbols in number sentences</li></ul>                                                         |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                            |
| Review                                     | <ul style="list-style-type: none"><li>use checking strategies to decide if answers are reasonable</li><li>interpret answers within the context of the problem and consider whether answers are sensible</li><li>interpret information presented in charts and diagrams and draw appropriate conclusions</li></ul>                                                                                                                     |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                            |
| Use number facts and relationships         | <ul style="list-style-type: none"><li>count reliably up to 5 objects</li><li>recognise numbers 0 to 5 and relate a number 0 to 5 to its respective quantity</li><li>compare and order numbers to at least 5</li></ul>                                                                                                                                                                                                                 | <ul style="list-style-type: none"><li>count reliably up to 10 objects</li><li>read and write numbers to at least 10</li><li>compare and order numbers to at least 10</li></ul>                                                                                                                    | <ul style="list-style-type: none"><li>count reliably up to 20 objects</li><li>read and write numbers to at least 20</li><li>compare and order numbers to at least 20</li><li>use number facts within 10, i.e.:<ul style="list-style-type: none"><li>doubling and halving, e.g. <math>4 + 4</math></li><li>bonds of 10, e.g. <math>6 + 4</math></li></ul></li></ul> | <ul style="list-style-type: none"><li>count sets of objects by grouping in 2s, 5s</li><li>read and write numbers to 100</li><li>compare and order 2-digit numbers</li><li>use mental recall of number facts to 10 to<ul style="list-style-type: none"><li>doubling and halving, e.g. <i>derive <math>40 + 4</math></i></li></ul></li></ul> |
| Fractions, decimals, percentages and ratio |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"><li>find halves in practical situations</li></ul>                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                            |
| Calculate using mental and written methods | <ul style="list-style-type: none"><li>understand and use the concept of 'one more' in their play</li><li>understand and use the concept of 'one less' in their play</li></ul>                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"><li>combine two groups of objects to find 'how many altogether?'</li><li>take away objects to find 'how many are left?'</li></ul>                                                                                                                               | <ul style="list-style-type: none"><li>add and subtract numbers involving 10</li><li>use 'counting on' strategies to larger number, e.g. <math>8 + 5</math></li></ul>                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                            |
| Estimate and check                         |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"><li>make a sensible estimate of a checked by counting</li></ul>                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                            |
| Manage money                               | <ul style="list-style-type: none"><li>demonstrate an awareness of the purpose of money through role play</li></ul>                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"><li>use 1p, 2p, 5p and 10p coins to pay for items</li></ul>                                                                                                                                                                                                     | <ul style="list-style-type: none"><li>use different combinations of</li><li>find totals and give change for</li></ul>                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                            |
| Length, weight/mass, capacity              | <ul style="list-style-type: none"><li>compare, sort and order two objects in terms of size, weight or capacity by direct observation</li></ul>                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"><li>use direct comparisons with:<ul style="list-style-type: none"><li>length, height and distance, e.g. <i>longer/shorter than</i></li><li>weight/mass, e.g. <i>heavier/lighter than</i></li><li>capacity, e.g. <i>holds more/less than</i></li></ul></li></ul> | <ul style="list-style-type: none"><li>use non-standard units to measure</li><li>length, height and distance</li><li>weight/mass</li><li>capacity</li></ul>                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                            |
| Time                                       | <ul style="list-style-type: none"><li>anticipate events related to elements of daily routines and use the terms 'before' and 'after'</li></ul>                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"><li>demonstrate a developing sense of how long tasks and everyday events take</li><li>use the concept of time in terms of their daily activities</li></ul>                                                                                                      | <ul style="list-style-type: none"><li>use standard units of time to and 12-hour digital clocks</li><li>use the concept of time in terms of the seasons of the year</li></ul>                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                            |

# The Numeracy Framework

| Numeracy Key Stage 2           |                                            | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Year 4                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                       | Year 6                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strands                        | Elements                                   | Learners are able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Learners are able to:                                                                                                                                                                                                                                                                                                                                                                                                                                     | Learners are able to:                                                                                                                                                                                                                                                                                                                                                                                                        | Learners are able to:                                                                                                                                                                                                                                                                                                                                                              |
| Developing numerical reasoning | Identify processes and connections         | <ul style="list-style-type: none"><li>transfer mathematical skills to a variety of contexts and everyday situations</li><li>identify the appropriate steps and information needed to complete the task or reach a solution</li><li>select appropriate mathematics and techniques to use</li><li>select and use suitable instruments and units of measurement</li><li>choose an appropriate mental or written strategy and know when it is appropriate to use a calculator</li><li>estimate and visualise size when measuring and use the correct units</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                    |
|                                | Represent and communicate                  | <ul style="list-style-type: none"><li>explain results and procedures clearly using mathematical language</li><li>refine informal methods of recording written calculations, moving to formal methods of calculation when developmentally ready</li><li>use appropriate notation, symbols and units of measurement</li><li>select and construct appropriate charts, diagrams and graphs with suitable scales</li></ul>                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                    |
|                                | Review                                     | <ul style="list-style-type: none"><li>select from an increasing range of checking strategies to decide if answers are reasonable</li><li>interpret answers within the context of the problem and consider whether answers, including calculator, analogue and digital displays, are sensible</li><li>draw conclusions from data and recognise that some conclusions may be misleading or uncertain</li></ul>                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                    |
| Using number skills            | Use number facts and relationships         | <ul style="list-style-type: none"><li>read and write numbers to 1 000</li><li>compare and estimate with numbers up to 100</li><li>use mental strategies to recall multiplication tables for 2, 3, 4, 5, 6 and 10 and use to solve division problems</li><li>multiply and divide numbers by 10 and 100</li></ul>                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"><li>read and write numbers to 10 000</li><li>compare and estimate with numbers up to 1000</li><li>use mental strategies to recall multiplication tables for 2, 3, 4, 5, 6 and 10 and use to solve division problems</li><li>multiply and divide numbers by 10 and 100</li></ul>                                                                                                                                         | <ul style="list-style-type: none"><li>read and write numbers to 100 000</li><li>compare numbers with 1 and 2 decimal places</li><li>use mental strategies to recall multiplication tables for 2, 3, 4, 5, 6, 8 and 10 and use to solve division problems</li><li>multiply and divide numbers and decimals by 10 and 100</li></ul>                                                                                            | <ul style="list-style-type: none"><li>read and write numbers to 1 million and numbers to 3 decimal places</li><li>use mental strategies to recall multiplication tables up to <math>10 \times 10</math> and use to solve division problems</li><li>multiply numbers and decimals by a multiple of 10, e.g. <math>15 \times 30</math>, <math>1.4\text{m} \times 20</math></li></ul> |
|                                | Fractions, decimals, percentages and ratio | <ul style="list-style-type: none"><li>use halves and quarters</li><li>halve 2-digit numbers in the context of number, money and measures</li><li>find fractional quantities linked to known multiplication facts, e.g. <math>\frac{1}{4}</math> of 18, <math>\frac{1}{2}</math> of 15</li></ul>                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"><li>halve 3-digit numbers in the context of number, money and measures</li><li>find fractional quantities using known table facts, e.g. <math>\frac{1}{4}</math> of 30cm</li><li>recognise fractions that are several parts of a whole, e.g. <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math></li></ul>                                                                                                               | <ul style="list-style-type: none"><li>use understanding of simple fraction and decimal equivalences when measuring and calculating, e.g. <math>\frac{1}{2} = 0.5</math>, <math>\frac{1}{10} = 0.1</math></li><li>calculate fractional quantities, e.g. <math>\frac{1}{4}</math> of 24 = 3, so <math>\frac{3}{4}</math> of 24 = 15</li><li>use doubling and halving strategies when working with simple proportions</li></ul> | <ul style="list-style-type: none"><li>use understanding of simple fraction, decimal and percentage equivalences, e.g. find 25% of 60cm and know that this is equivalent to <math>\frac{1}{4}</math> of 60cm</li><li>calculate percentage quantities based on 10%, e.g. 20%, 5%, 15%</li><li>use simple ratio and proportion</li></ul>                                              |
|                                | Calculate using mental and written methods | <ul style="list-style-type: none"><li>find differences within 100</li><li>use mental strategies to add and subtract 2-digit numbers</li><li>use partitioning to double and halve 2-digit numbers</li></ul>                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"><li>find differences within 1000</li><li>add a 2-digit number to, and subtract a 2-digit number from, a 3-digit number using an appropriate mental or written method</li><li>use mental strategies to multiply and divide 2-digit numbers by a single digit number</li></ul>                                                                                                                                            | <ul style="list-style-type: none"><li>find differences between numbers with 1 decimal place</li><li>add and subtract 3-digit numbers using an appropriate mental or written method</li><li>multiply and divide 3-digit numbers by a single-digit number</li></ul>                                                                                                                                                            | <ul style="list-style-type: none"><li>add and subtract numbers using whole numbers and decimals</li><li>multiply 2- and 3-digit numbers by a 2-digit number</li><li>divide 3-digit numbers by a 2-digit number</li></ul>                                                                                                                                                           |
|                                | Estimate and check                         | <ul style="list-style-type: none"><li>check subtraction using addition</li><li>check halving using doubling</li><li>check multiplication using repeated addition</li></ul>                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"><li>check answers using inverse operations</li><li>estimate by rounding to the nearest 10 or 100</li></ul>                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"><li>check answers using inverse operations</li><li>estimate by rounding to the nearest 10, 100 or 1000</li></ul>                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"><li>check answers using inverse operations</li><li>estimate by rounding to the nearest 10, 100, 1000 or whole number</li></ul>                                                                                                                                                                                                                   |
| Using measuring skills         | Manage money                               | <ul style="list-style-type: none"><li>use different combinations of money to pay for items up to £2 and calculate the change</li><li>order and compare items up to £10</li><li>record money spent and saved</li></ul>                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>use money to pay for items up to £10 and calculate the change</li><li>order and compare items up to £100</li><li>add and subtract totals less than £10 using correct notation, e.g. <math>£6.85 - £2.76</math></li><li>manage money, compare costs from different retailers and determine what can be bought within a given budget</li></ul>                                                                        | <ul style="list-style-type: none"><li>order and compare the cost of items up to £1000</li><li>add and subtract totals less than £100 using correct notation, e.g. <math>£28.18 + £33.45</math></li><li>plan and track money and savings by keeping accurate records</li><li>realise that budgeting is important</li></ul>                                                                                                    | <ul style="list-style-type: none"><li>use the terms profit and loss in buying and selling activities and make calculations for this</li><li>understand the advantages and disadvantages of using bank accounts</li><li>make comparisons between prices and understand which is best value for money</li></ul>                                                                      |
|                                | Length, weight/mass, capacity              | <ul style="list-style-type: none"><li>recognise that perimeter is the distance around a shape</li><li>use standard units of measure:<ul style="list-style-type: none"><li>length: measure on a ruler to the nearest 10 cm</li><li>weight/mass: use 5g, 10g and 100g weights</li><li>capacity: use litres and half litres; measure to the nearest 100ml</li></ul></li></ul>                                                                                                                                                                                       | <ul style="list-style-type: none"><li>measure and calculate the perimeter of squares and rectangles</li><li>measure on a ruler to the nearest mm and record using a mix of units, e.g. 1cm 3mm</li><li>use weighing scales with divisions to weigh objects to the nearest 5g, 10g, 25g or 100g</li><li>measure capacities to the nearest 50ml or 100ml</li><li>convert metric units of length to smaller units, e.g. cm to mm, m to cm, km to m</li></ul> | <ul style="list-style-type: none"><li>measure perimeters</li><li>use measuring instruments with 10 equal divisions between each major unit, and record using decimal notation, e.g. 4.2cm, 1.3kg</li><li>make use of conversions, e.g. <math>\frac{1}{2}</math> of a km = 250m</li></ul>                                                                                                                                     | <ul style="list-style-type: none"><li>read and interpret scales or divisions on a range of measuring instruments</li><li>record measurements in different ways, e.g. 1.3kg = 1kg 300g</li><li>use the language of imperial units in daily use, e.g. miles, pints</li></ul>                                                                                                         |
|                                | Time                                       | <ul style="list-style-type: none"><li>tell the time to the nearest 5 minutes on an analogue clock and calculate how long it is to the next hour</li><li>read hours and minutes on a 12-hour digital clock using am/pm conventions</li></ul>                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>tell the time to the nearest minute on analogue clocks</li><li>read hours and minutes on a 24-hour digital clock</li><li>time and order events in seconds</li><li>use calendars to plan events</li></ul>                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>read and use analogue and digital clocks</li><li>time events in minutes and seconds, and order the results</li><li>carry out practical activities involving timed events and explain which unit of time is the most appropriate</li></ul>                                                                                                                                              | <ul style="list-style-type: none"><li>use and interpret timetables and schedules to plan events and activities and make calculations as part of the planning process</li><li>estimate how long a journey takes</li><li>time events in minutes and seconds to the nearest tenth of a second</li></ul>                                                                               |
|                                | Temperature                                | <ul style="list-style-type: none"><li>take temperature readings using thermometers and interpret readings above and below 0°C</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"><li>measure and record temperatures involving positive and negative readings</li><li>calculate temperature differences, including those involving temperature rise and fall across 0°C</li></ul>                                                                                                                                                                                                                        | <ul style="list-style-type: none"><li>measure and record temperatures involving positive and negative readings</li><li>calculate temperature differences, including those involving temperature rise and fall across 0°C</li></ul>                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                    |
| Area and volume                | Angle and position                         | <ul style="list-style-type: none"><li>find areas by counting squares</li><li>use the four compass points to describe directions</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"><li>recognise volume in practical contexts</li><li>use eight compass points to describe direction</li></ul>                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"><li>calculate, estimate and compare the area of squares and rectangles using standard units</li><li>find volumes by counting and other practical methods</li><li>use coordinates to specify location</li></ul>                                                                                                                                                                             | <ul style="list-style-type: none"><li>calculate the area of squares and rectangles</li><li>use grid references to specify location</li></ul>                                                                                                                                                                                                                                       |
|                                |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                    |



**Ailymweld á'r Adroddiad Thematig – Mewnwelediadau i wella addysgu ac arweinyddiaeth mewn addysg fathemateg**

**Revisiting the Thematic Report - Insights into improving teaching and leadership in mathematics education**



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## Dolenni perthnasol:

[Datgloi potensial: Mewnwelediadau i wella addysgu ac arweinyddiaeth mewn addysg fathemateg – Estyn](#)

[Adnoddau Fideo Mathemateg – Estyn](#)

[Podllediad Sgwrs: Meddyliau ar addysgu Mathemateg yng Nghymru – Estyn](#)

[Estyn yn Fyw: Mewnwelediadau i wella addysgu ac arweinyddiaeth mewn addysg fathemateg](#)

## Relevant Links:

[Unlocking potential: Insights into improving teaching and leadership in mathematics education - Estyn](#)

[Mathematics Video Resources - Estyn](#)

[Sgwrs Podcast: Thoughts on the teaching of Mathematics in Wales - Estyn](#)

[Estyn yn fyw Ffocws thematig Mewnwelediadau i wella addysgu ac arweinyddiaeth mewn addysg fathemateg](#)



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# Paratoi cwestiynau i'r cydlynnydd Mathemateg a Rhifedd

## Preparing questions for the Mathematics and Numeracy co-ordinator



**Diolch**  
**Thank You**

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