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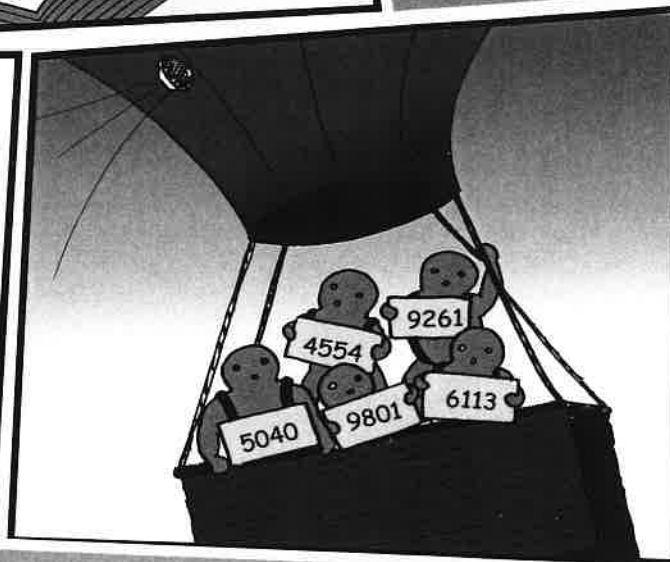
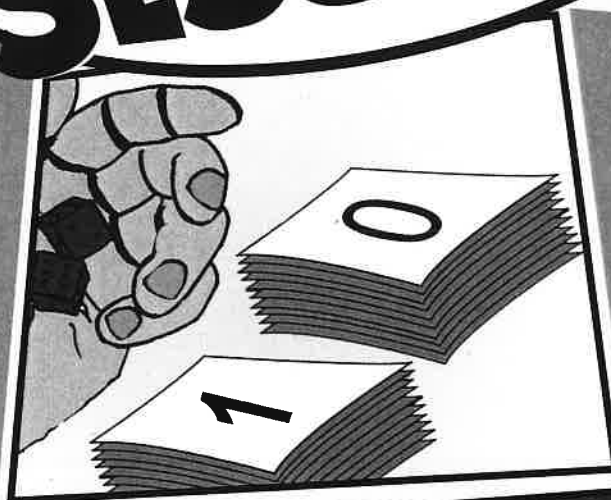
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ACTIVE ASSESSMENT



From the
creators of
Concept
Cartoons

Suitable for
Primary and
Secondary
Schools

Thinking Learning and Assessment in Mathematics

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Consumer reports

What are they?

Consumer reports is a general name that we give to a group of activities based on letters from consumers or reports on products. A consumer report requires learners to engage in critical thinking about an issue. As they talk together and make judgements there are opportunities for self and peer-assessment. The way they respond to the consumer reports also gives you an indication of their level of understanding.

How to use them

Ensure that learners understand what a consumer report (or complaint) is. Give learners the problem at the start of a lesson and challenge them to respond to it in an appropriate role. What might someone in that role say? How will they respond? Follow up will depend on how well they respond to the initial stimulus. If their understanding is secure, then consolidate learning by challenging them with the extension on the worksheet. Otherwise, provide access to resources and experiences to enable them to build their understanding first.

How to create your own

First identify a context or issue. One starting point could be to focus on maths games and activities that are faulty in some way, e.g. a game that contains flawed rules, a poster that is mislabelled, a dictionary with misfit definitions, and so on. You can use the strategy with a range of topics.

Additional information

If using 'Product recall', try to avoid having any information about times tables visible until they have discussed their ideas. 'Box-net' provides a direct application of their knowledge about nets. Some learners may need to unwrap boxes and explore a variety of shapes in order to work through this problem successfully.

Product recall

MULTITIMES

PRODUCT RECALL

Some errors have been spotted in our 6 times table.

$1 \times 6 = 6$
$2 \times 6 = 16$
$3 \times 6 = 18$
$4 \times 6 = 24$
$5 \times 6 = 36$
$6 \times 6 = 42$
$7 \times 6 = 42$
$7 \times 6 = 48$
$9 \times 6 = 45$
$10 \times 6 = 60$

$6 \div 6 = 1$
$12 \div 6 = 6$
$18 \div 3 = 6$
$3 \div 6 = 24$
$6 \div 5 = 30$
$42 \div 6 = 36$
$6 \div 42 = 7$
$48 \div 6 = 8$
$9 \div 54 = 6$
$60 \div 10 = 6$

PLEASE RETURN ANY FAULTY TABLES TO
MULTITIMES TO RECEIVE A FULL REFUND.

Can you spot the mistakes? Write a note to the manager of Multitimes and say which sums you think need replacing. When you have written your note, discuss your ideas with another group. Do you all agree?

Now create some faulty times tables for other groups to fix.

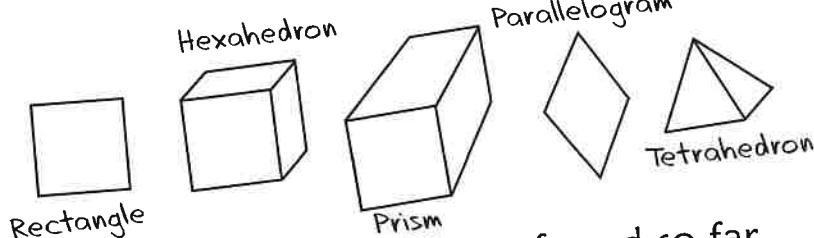
Shape it up

Mrs Brake ordered a set of shapes for her daughter to play with. Each shape has a label. She thought that some of the labels were wrong. She wrote a letter of complaint.

Dear Great Gamez,

I recently purchased 'Shape it Up' for my daughter. However, we have stopped using it because a lot of the shapes have the wrong labels.

I think the following shapes are wrong:



These are the shapes I have found so far. There may be more. Please can you replace the faulty shapes or send me a new set of 'Shape it Up'.

Yours faithfully,

Mrs Brake.

Look at the shapes and decide what the problem is, then share your ideas with another group. Did you agree with each other? Now imagine that you are the manufacturer of 'Shape it Up'. Write a letter to Mrs Brake explaining what the problem is. Which other shapes and names might cause problems?

Dear Doctor

What are they?

In Dear Doctor activities, someone has written to an expert with a problem based on a potential misconception. They work well as Active Assessment strategies because they put the learners in the role of experts. The expert starts to provide an explanation, and learners are asked to complete it. As learners work together to create a response, they challenge each other's thinking and highlight areas for development.

How to use them

It is possible to role-play the Dear Doctor scenarios. Give groups time to discuss their reply before presenting their ideas to the class. Other members of the class should be invited to respond or ask questions. Another strategy is for groups to produce replies, then swap these between different groups, and get them to suggest how to improve the reply. Access to appropriate resources will help learners who want to expand their understanding before responding.

How to create your own

The Dear Doctor format is very straightforward to write and lends itself to a range of scenarios. Most potential misconceptions can be presented through this strategy.

Additional information

Some learners may find the task quite challenging, but it is important to let them see how far they can take their reply before stepping in with further support or questions. You could set up a Dear Doctor handbook and add problems to it throughout the year, using errors and mistakes that learners make. Encourage learners to post problems in a Dear Doctor letterbox. At the end of the week, open the box and share the problems. Can anyone post a Dear Doctor reply? Collate these into a Dear Doctor manual.

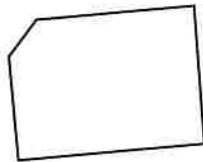
Same but different

Dear Dr Edge,

I'm sure I need my ears testing. I'm certain my teacher said that when you cut a piece off a shape you reduce its area and increase the perimeter. I'm not so sure about that but I was too embarrassed to say anything in class. Am I right?

Yours,

Louise



What do you think about Louise's ideas?



Talk about this problem with your friends. What do they think?

Try drawing a 2D shape on squared paper and find its area and perimeter. Now cut a piece off the shape and investigate whether the area and perimeter change. Do you always get the same answer?

Write a reply to Louise to answer her question.

Do you all agree about what to write?

Dear Louise,

I don't want to cut any corners on this answer. What your teacher said was ...

A likely tail

What do you think
about Steven's
ideas?



Dear Doctor Chancer,

Shane and I were bored so we decided to play a game of Heads and Tails. I flipped a coin and Shane had to guess which side it would land on. We did this ten times and every time it landed on a head. Shane reckons the chances of that happening were a million to one. I disagreed and said that it was just luck. This has got me thinking though. Can you help us?

Yours,
Steven

Discuss this problem with your group and talk about your ideas.

Try flipping a coin a number of times to see what happens. What do you notice?

Dear Steven and Shane,

Your question has got me in a spin. What you need to know is . . .

Now write a reply to Steven and Shane to help to answer their question.

Do you all agree about what to write?

Generating a set of instructions

What are they?

Generating instructions activities involve learners working together to break down a mathematical activity into a series of steps. Support is provided by making small segments of information visible. The activities have two points of challenge, one in the creation of the instructions and the second in sharing and gaining feedback. This allows judgements to be made about different aspects of the task and objectives to be set for the rest of the lesson.

How to use them

Start off in pairs or trios. These groups can then link with others to share ideas. Uncertainties or disagreements can be identified and then shared with the whole class. Alternatively, groups can present their instructions to the class, prompting discussion about how they can be improved. Two stars and a wish (that is, two good points and one thing that can be improved) is a useful method of evaluating the instructions. The sets of instructions can be collated into a reference book or series of posters.

How to create your own

You can write a set of instructions for virtually any process. Using the format of the following activities makes them more engaging. Using the lost text format helps learners who might otherwise be intimidated by a blank page. They could write a set of instructions for an alien from outer space, or imagine they are programming a robot to find the position of a point on a grid, read scales accurately, and so on.

Additional information

In each example, the instructions have been spoiled by a splash or stain. This is to provide a starting point for talking and thinking. However, learners could decide to use a different set of words, and they may suggest a range of ways to solve the problems.

Missing



Nicky's group are learning how to find a missing number in a number sequence. Unfortunately someone has splashed paint on the page. Can you help them to write out the instructions?

TO FIND A MISSING NUMBER IN A NUMBER SEQUENCE

2 5 10 17 ?

**1. First work out whether the
order of numbers**

**2. Next count
between**

**3. Look for any patterns
that appear**

After you have finished writing your instructions, compare your ideas with another group. Do you agree?

Now use each other's instructions as a guide for finding other missing numbers. Can you follow them?

Your turn



Sarah's group has written out a set of instructions for finding the rotational symmetry of a shape. Unfortunately someone has spilled water over the page. Can you help them to write out the instructions again?

FINDING ROTATIONAL SYMMETRY

1. First trace the shape

2. Then mark

3. Next, turn
90, 180

4. Now count the
sym

5. The rotational

When you have completed your instructions, swap with another group and follow their steps. Are they the same as yours?

Can you suggest any improvements that need to be made?

Now draw some shapes and use your instructions to find their order of rotational symmetry.

News reports

What are they?

Using real or imaginary news reports as an Active Assessment strategy encourages learners to think about aspects of mathematics in their everyday lives and begin to look critically at the information presented. Responding to comments about the news report provides learners with opportunities to challenge their thinking and to research ideas where necessary. At the same time, you can make judgments about their level of understanding and whether any further work or additional support is needed in a particular area.

How to use them

Start by talking about how it is easy to misinterpret data in the news. Then give learners time, in pairs, to discuss the news items and the statements. If everyone is confident about the ideas then challenge learners to create their own examples. Remind them to include statements that appear believable but which are not accurate. If there are uncertainties then use these to set objectives for the rest of the lesson.

How to create your own

News reports can be created by modifying real articles. Adding comments about the reports, some of which may contain deliberate mistakes, provides the opportunity to challenge learners at different levels. Learners can create news reports by skimming through different newspapers to spot examples of numbers in the news, or produce some of their own.

Additional information

Using news reports creates an ideal opportunity to link English and mathematics in a creative way. Can learners create a class newspaper that focuses on articles containing mathematical information? It could focus on real or imaginary events. They could also calculate the proportion of the news devoted to local, national and international events.

A piece of news

Alec's group are looking in newspapers to find examples of fractions in the news. They have found three examples so far and have created some sentences about them. What do you think about their ideas?

THE BABBLE

NOT A WORD

A sponsored silence held by 24 children at Shushton Primary School was broken after only ten minutes yesterday. One quarter of the children fell asleep and started sleep talking!

RESCUED BY DOLPHINS

A boat carrying 48 people overturned off

the coast of Florida yesterday. A pod of bottlenose dolphins came to the rescue by saving $\frac{1}{6}$ of those in the water and helping them back to shore.

MRS BAKEM PULLS THEM IN

Since Mrs Bakem started at Gullstone Primary School, the number of children

eating school meals has rocketed. The headteacher said :

"A staggering three quarters of our children now tuck into Mrs Bakem's tasty treats. Only 23 children don't have school meals."

1. The sponsored silence was broken by four children who fell asleep.
2. Thirty nine people were rescued by dolphins off the coast of Florida.
3. There are 69 children in Gullstone Primary School.

Talk about the statements. Do you agree with each other? Look in some newspapers to find more examples of fractions in the news or write your own. Now create some statements for another group to talk about.

Posters

What are they?

Posters help learners to explore, share and display their ideas in a concise manner. They are particularly useful as Active Assessment activities, because learners will want to make sure that their ideas are secure before sharing the posters with their target audience. Clarifying their ideas in this way is a good stimulus for learning and creates a sense of purpose for follow up activities.

How to use them

You may need to give learners some initial support. However, once they have started, it is best to let them work without any direct intervention. To follow up with confident learners, you could run a poster conference. Groups display their posters on the wall next to a blank piece of paper. Each group then moves around the room, looking at the posters and writing comments as they circulate. Alternatively, pairs could join to form small groups to share their ideas.

How to create your own

Posters can be created for almost any topic and presented in a variety of styles. They could focus on a number, a shape, an algorithm or process, a unit of measurement, and so on. Posters that incorporate an element of humour, such as 'Wanted' or 'Lost' posters, work effectively for most learners. Inventing a character that appears in each of the posters can also be motivating.

Additional information

The examples use posters in different ways. The 'Lost' poster challenges learners to pool ideas about a particular shape. The 'How to...' illustration invites them to create a teaching poster about ordering fractions. You could differentiate this by allocating different fractions to each group. The 'Want to know...?' activity is an example of an information poster. Each one requires learners to discuss and research ideas in order to create accurate posters.

Poly-gone!

A rectangle has gone missing and Jack's group have been asked to design a poster to help find it. Can you help them?

LOST RECTANGLE



REWARD £100

LAST SEEN IN CLASS 4B

-DESCRIPTION-

Has 2 lines the same length

It is made up of 4 triangles

Will answer to the name quadrilateral

tel 475 626

email rectangle@lostshape.co.uk

After you have talked about your ideas, team up with another group.
Discuss how your posters could be improved.

Try to find out more by looking in a mathematics dictionary. Now make a
'Lost' or 'Wanted' poster for another shape that has gone missing.

A piece of cake

Pip's group are creating a 'How to' poster, to teach people how to decide which is the biggest fraction. They have made a start but need some help finishing it. Can you help them?

How to get more than your fair share!

Are you having problems deciding which is the biggest slice?

Imagine that you have to choose between $\frac{3}{16}$ and $\frac{2}{12}$.

Here is what to do.

STEP 1

Decide whether the denominators are the same.
You can do this by

STEP 2

Discuss your ideas before teaming up with another group to share ideas. Do you agree? Hold a poster conference and look at each other's posters. Give feedback to other groups to help them improve their poster. Now create another poster for a different rule about fractions, such as multiplying fractions.

Sales pitch

What are they?

Sales pitches focus on various aspects of selling items. They work well as Active Assessment strategies by getting learners to explore their ideas, carry out further research and present information in an interesting or novel way. They are particularly useful in topics that involve building on what learners already know by reviewing their understanding in this new context. As well as providing evidence of their understanding, this also acts as a stimulus for further learning.

How to use them

Remind learners that there might be mistakes and/or misleading information in the advert and images. Don't pass judgement on their work, but do give them access to resources and answer any sensible questions. The obvious follow up is to share ideas about how accurate the advertisements are. Where learners are confident in their ideas, get them to create and display their own sales pitches. If there are any areas of misunderstanding or disagreement, these can be used to set the learning agenda for what follows.

How to create your own

You can create your own sales pitches using a format similar to the following activities. The content can be as creative as you wish. For example, a job advert for a shape might be presented as a TV or press ad. It helps to include some deliberate mistakes, so that the learners' first task is to decide if the information is appropriate. It gives them a point from which to start, rather than a blank piece of paper.

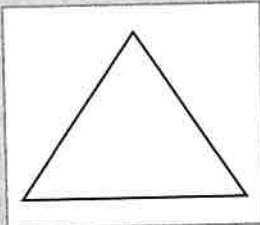
Additional information

You could turn this activity into a role play. For example, one group could take on the role of an unscrupulous advertiser trying to sell dodgy maths concepts or operations, while another group could pretend to be from the Maths Office of Fair Trading and respond to them.

Prism sale

Rebecca's group are selling one of their favourite shapes on the internet site maths.co.ve. They have started to create their advert but they need help to finish it. They are not sure if their ideas are correct. What else could you add to the advert?

maths.co.ve

Item number 4527890345		
	Current bid: £12.99	Meet the seller Ask seller a question
	End time: 3 hrs 24 mins	
	Quantity available: 5	
Description		
<i>Item specifics;</i> Pyramid A unique opportunity to become the owner of an almost new square-based pyramid. It has four faces. All the faces are triangles.		

Compare your ideas with another group. You might want to find out more about pyramids by looking on the internet or in some mathematics dictionaries. Now design a new advert for another 3D shape.