



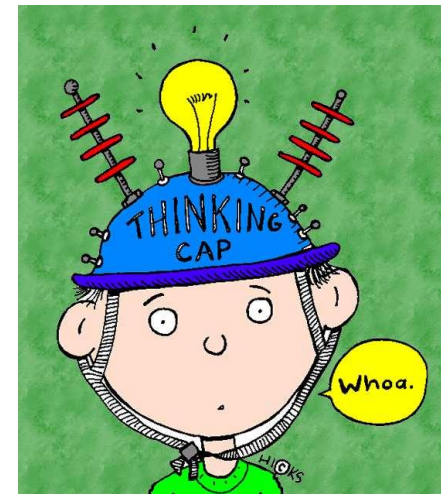
Wood End Park Academy

An Academy in The Park Federation Multi-Academy Trust

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To Question is to Grow

Examples of reasoning and explanations



Children are encouraged to explain their reasoning out loud during the AFL starter, pupil task and as part of their plenary or next step.

In Key Stage one, spoken responses are recorded onto post-its in their books before they progress to their own written explanation

Year 1
example

$2 \div 2 = 1$ ✓ $10 \div 2 = 5$ ✓
 $8 \div 2 = 4$ ✓ $8 \div 4 = 2$ ✓
 $4 \div 4 = 1$ ✓ $14 \div 2 = 7$ ✓
 $12 \div 4 = 3$ ✓ $16 \div 2 = 8$ ✓
 $16 \div 4 = 4$ ✓

Layer 3

$25 \div 5 = 5$ ✓
 $12 \div 4 = 3$ ✓
 $20 \div 5 = 4$ ✓

LO & PTH Fantastic!
NS: Continue with layer 3
(E)

I shared the dots in the cups. I looked at the second number to find out how many cups.

Year 1
example

14.3.17

LO: I can multiply using arrays.

Layer 3

$2 \times 10 = 20$ ✓
 $2 \times 10 = 20$ ✓
 $4 \times 5 = 20$ ✓
 $6 \times 2 = 12$ ✓
 $1 \times 2 = 2$ ✓
 $10 \times 5 = 50$ ✓
 $8 \times 2 = 16$ ✓
 $7 \times 10 = 70$ ✓
 $3 \times 2 = 6$ ✓

Layer 4

$2 \times 3 = 6$ ✓
 $4 \times 5 = 20$ ✓
 $6 \times 4 = 24$ ✓
 $1 \times 8 = 8$ ✓
 $6 \times 10 = 60$ ✓
 $8 \times 6 = 48$ ✓
 $7 \times 5 = 35$ ✓
 $7 \times 5 = 35$ ✓

LO & PTH (E) Well done!
NS: Each class in Year 1 needs 6 pencils. How many pencils altogether? (E)

The clock helped me because I know it goes up in 5's. I counted in 5's to 30. I stopped at the number 6 because it was in the number sentence.

Moving onto written explanation: children are encouraged to try written explanations on their whiteboard during class AFL starters and as part of their pupil task in all layers. Adults will guide on accuracy.

Greater depth children are expected to prove their answer or "convince me", and back up their explanations with examples, pictorial diagrams or by using concrete materials to show they are correct.

can plot points and draw lines to create a polygon

$A = (4, 2)$
 $B = (8, 2)$
 $C = (6, 5)$

I know this is an isosceles triangle because an isosceles triangle has two sides that are equal and I used my ruler to check two sides were the same and they are

Year 4 example: What kind of triangle is this? How do you know?

Layer 5:

1. All of these are equivalent because if you look at the diagram $1/5$ is equivalent to $2/10$ so if you split it into 10 it will be coloured 2 squares. We also know that 20% is equivalent to $2/10$ so I coloured 2 squares and 0.2 is equivalent to $2/10$ as well so I also coloured 2 squares so this proves that all of these are equivalent to each other.

Year 6 example. Prove that the fractions are equivalent

Lo: I can solve problems involving percentages.

Layer 2

9% = 4500 1% = 5 ✓

100% = 5000 20% = 1000 5% = 250 ✓

10% = 500 100% = 5000 10% = 500 ✓

100% = 5000 40% = 2000 30% = 1500 ✓

10% = 500 100% = 5000 10% = 500 ✓

30% = 1500 40% = 2000 100% = 5000 ✓

100% = 5000 50% = 2500 20% = 1000 ✓

10% = 500 50% = 2500 100% = 5000 ✓

5% = 250 50% = 2500 100% = 5000 ✓

1% = 50 50% = 2500 100% = 5000 ✓

If 100% = 500

Year 5 example: If you know 100% is 500...what else do you know?

Children are encouraged to derive new facts from facts they know and explain how they achieved their answer.

For example if $7 \times 8 = 56$

What is $56 \div 7$?

Or what is 70×80 ?

Explain your answer.

We give children opportunity to look at facts and completed questions and state whether that statement is true or false. Children explain their reasoning in an explanation.

This is extended in some activities to: 'always', 'sometimes', 'never', 'true'.

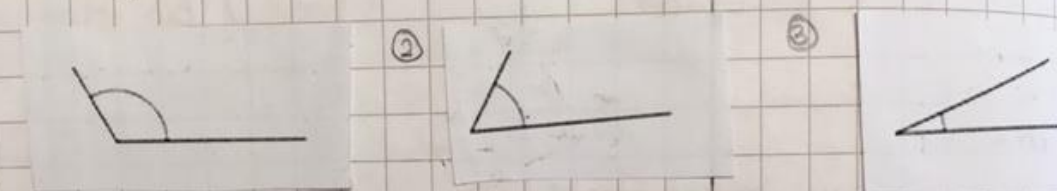
Layer 3

1. He is wrong because 100 which is C minus 5 ~~7~~ you cannot do ✓
2. He is wrong M is 1000 and CM is 900 so he is wrong because he wrote 1804 when it is 1904 ✓
3. He is wrong because in Roman Numerals you cannot write 111 VVV because to get 18 you will have to write X which equals 10 and then V 111 ✓
4. Jack is wrong again because CM is 900 and VI = 6 so the answer is 906 not 956 ✓
5. He is wrong because D = 500 and C = 100 so that will leave more with 600 not 1100 ✓

0 7 . 0 3 . 2 0 1 7

Lo-1 can compare and order angles.

Descending order

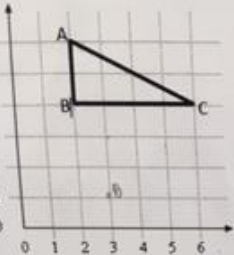


I think it would be correct in this order as I know the degrees as the number is less than 180 and the other are less than 90 degrees.

Further comments are given to children to help them deepen their understanding by reasoning and problem

Next Step

Next Step: Reasoning



Amy draws triangle ABC on the grid.

She wants to translate the triangle so that point B becomes the coordinate (3,1). Hazel says,

Point A will become (1,1)

Do you agree? Explain why. **NO**

To make point B to (3,1), the translation is 1 right, 3 down. If she does the same to A, the new point A would be (3,3). When the shape moves, it needs to look the same. This means it has to have the same amount of vertices, sides and edges.

good use of mathematical vocabulary LO x Ptt

What do you think Amy did wrong? How did she get her answer?

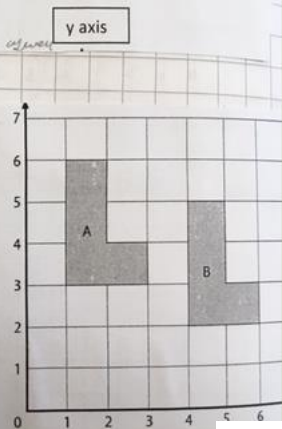
Amy found that the two points have a two square difference, but she did not look at the y axis, but the x axis.

Year 5 example

well done 😊

a) Explain how to translate shape A so that it covers shape B.

2 squares right and 1 square down. I know this was the way to get the answer because I found out the old coordinates then found out the new coordinates and then found with the difference and that's how I got my answer.



Year 4 example explanation

Label what each square represents.

NS: Which is the odd one out? Why?

| | | | | |
|------------------|------------------|------------------|-----------------|------------------|
| 2 | 0.4 | $\frac{4}{10}$ | $\frac{3}{6}$ | $\frac{6}{18}$ |
| $\frac{40}{100}$ | $\frac{40}{100}$ | $\frac{40}{100}$ | X | $\frac{40}{100}$ |
| | | | $\frac{45}{90}$ | |

I know that $\frac{3}{6}$ is the odd one out because $\frac{45}{90}$ that is already a different number to all the rest and it can't be the same because it is higher than numbers

Year 6 example

Odd one out

I found that the negative numbers were harder to do however the other ways of algebra was easy. Although when doing the questions I did need to do a lot of trial and error to find the correct answer.

Year 6 example
self reflection

Children respond to feedback from the teacher and given opportunity to reflect on their learning.

Year 5 example
instructions for
another child

Children are given opportunities to write for different audiences

For example writing tips or instructions for another person who may be finding it difficult, explaining to the class or giving an explanation to the principal.

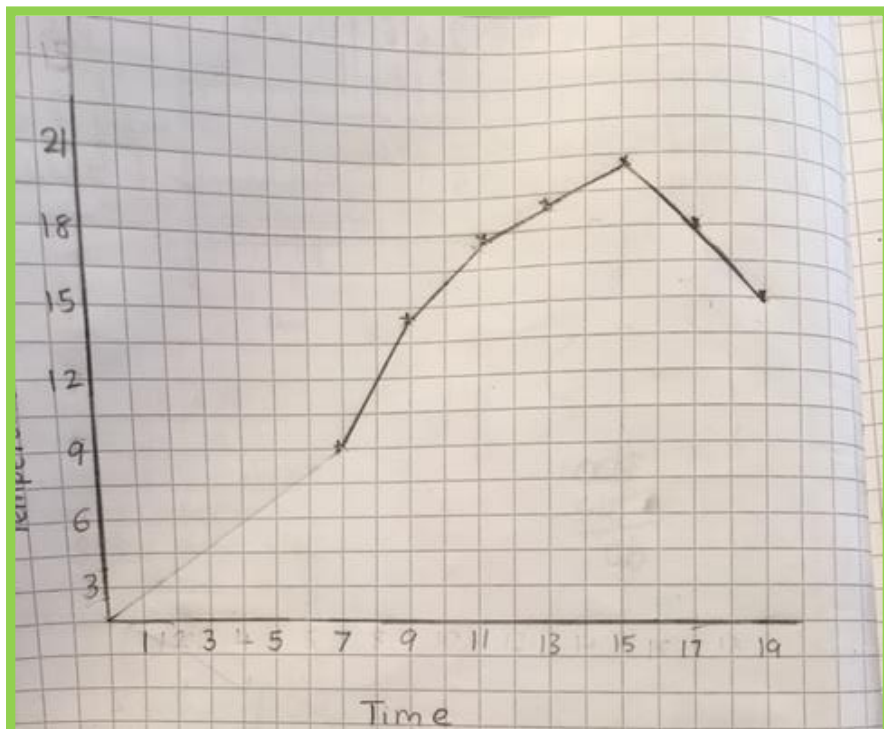
Sally says, "I feel ok multiplying a fraction by a whole number but multiplying a mixed number confuses me."

Can you write a set of instructions to help her understand? Include an example in your explanation.

1. Firstly, convert the mixed number into an improper fraction.
2. Then times the ^{numerator} top number by your whole number.
3. keep the denominator same and convert it back.

Multiply these mixed numbers by 3 and place them in order from the biggest to smallest

$$2\frac{3}{5} \times 3 = \frac{39}{5} = 7\frac{4}{5} = 7.8$$
$$2\frac{1}{2} \times 3 = \frac{15}{2} = 7\frac{1}{2} = 7.5$$



In my graph, the trend is showing what temperature it is every two hours. The biggest drop is between 17:00 and 19:00. The highest gradient is at 15:00 with 20°C. Every two hours, the temperature has increased but starts decreasing at 15:00.

Children can give more detailed explanations to explain data and position and direction in various contexts.

10. I can describe the position of shapes using co-ordinates. 20

1. The co-ordinates of the kite are: a is 2,8 because when you go down the corridor you read with the number two, then if you go up the stairs you read with eight. That means it 2,8. B is 4,10 because in the corridor its 4 then up the stairs is 10 so corner B is 4,10. C is 7,8 because the corridor leads up to 7 and from what we know from A we know that up the stairs its 8 so we know its 7,8. Then last but not least know its 4,6 for the corridor its 4 as we know from B then 6 as its up the stairs so its 4,6.

2. No, because you need to know which is corridor and which is stairs and if up is down it will be wrong.

LO * PH ✓

