CORNERSTONE MATHS

Geometric similarity

Examples of pupils' work

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Examples are from

- Investigation 2, Q. 4-5 "What is the relationship between an original and a mathematically similar shape?"
- Investigation 3, Q. 11-12 "Describe what a scale factor is. Describe how to use it..."
- Investigation 4, Q. 7 "Devise a set of instructions so that anyone can create mathematically similar enlargements."
- Investigation 5, Q. 2 "What is the relationship between corresponding angles in mathematically similar shapes?"

What is the relationship between an original and a mathematically similar shape?"(Inv 2, Q. 4-5)

4. On the basis of these observations, what is the relationship between an original and a mathematically similar rectangle?
HINT: Use the words height and width in your answer.

The relationship ~~is~~ in a mathematically similar rectangle to ~~a son~~ the original rectangle is that the width and height has to be multiplied by the same number.

5. Why would the relationship hold true for all mathematically similar shapes?

It's ~~because the it's~~ enlarged because the width and height are multiplied by the same number.

4. On the basis of these observations, what is the relationship between an original and a mathematically similar rectangle?
HINT: Use the words height and width in your answer.

The height and width are ~~rather~~ the answer you would get is you multiplied ~~it~~ original with ~~the same number~~ ~~thing~~ and get the multiple of height and width

5. Why would the relationship hold true for all mathematically similar shapes?

4. On the basis of these observations, what is the relationship between an original and a mathematically similar rectangle?
HINT: Use the words height and width in your answer.

The original is ~~mathematically~~ similar with Copy 1 and Copy 2 because

$\frac{6}{8} = \frac{12}{16} = \frac{3}{4}$

5. Why would the relationship hold true for all mathematically similar shapes?

Yes

4. On the basis of these observations, what is the relationship between an original and a mathematically similar rectangle?
HINT: Use the words height and width in your answer.

Their height and width is proportional between the original and the mathematically similar copy

5. Why would the relationship hold true for all mathematically similar shapes?

4. On the basis of these observations, what is the relationship between an original and a mathematically similar rectangle?
HINT: Use the words height and width in your answer.

The width and the height must be proportional, Proportional

so 10/5 and 20/10 are similar because $\frac{10}{5} = \frac{20}{10} = 2$

5. Why would the relationship hold true for all mathematically similar shapes?

~~Because it's multiplied version~~

Because it does.

Discuss the responses…

- How might you use these to stimulate discussion?
- How could pupils answers to Q.4 support them to extend their reasoning to polygons other than rectangles?

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Describe what a scale factor is. Describe how to use it...” (Inv 3, Q. 11 12)

11. Describe what a scale factor is.

It is the number you multiply the original to get the copy

12. Describe how to use scale factor to find the lengths of sides in a mathematically similar copy when you know the lengths of the original.

You multiply the scale factor by the sides of the original

11. Describe what a scale factor is.

It's explain the height and the lenght of a shape

12. Describe how to use scale factor to find the lengths of sides in a mathematically similar copy when you know the lengths of the original.

We put the scale factor ~~and~~ when the height and width are same with the original

11. Describe what a scale factor is. but not in this case.

A scale factor is a scale that controls the measurements of the copy of the original. The moment the scale is increased / decreased, you multiply the original's length by the scale factor to get the copy's length of the corresponding side

12. Describe how to use scale factor to find the lengths of sides in a mathematically similar copy when you know the lengths of the original.

You can find the lengths of the ~~ori~~ copy's sides by ~~chang~~ using a ~~sa~~ scale factor, choose a number and times all the lengths by that number.

11. Describe what a scale factor is.

A scale factor is a machine that enlarges the sides original.

12. Describe how to use scale factor to find the lengths of sides in a mathematically similar copy when you know the lengths of the original.

Multiply the side of the original with the scale factor.

11. Describe what a scale factor is.

Scale factor shows you how many times the copy ~~are~~ becomes larger or smaller

- Which responses show deeper understanding?
- How can use of the scale factor slider help pupils' reasoning?

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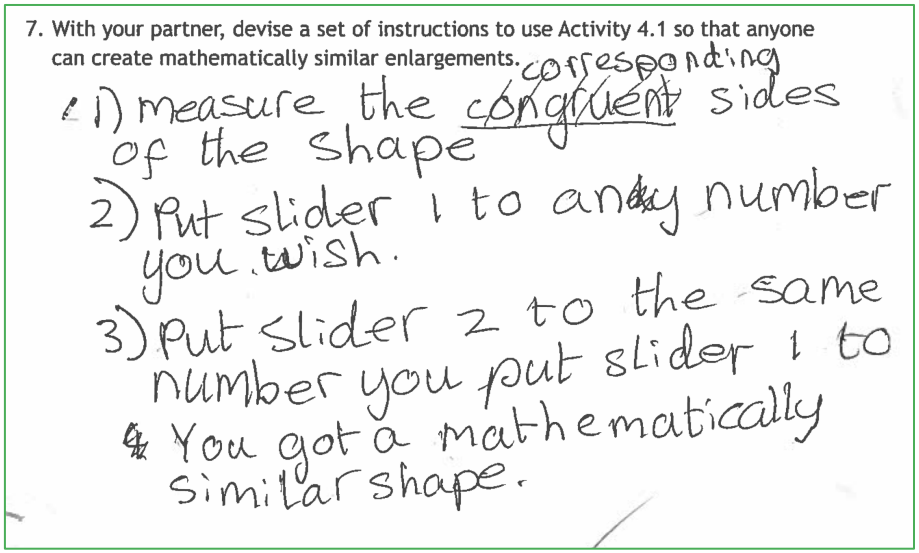
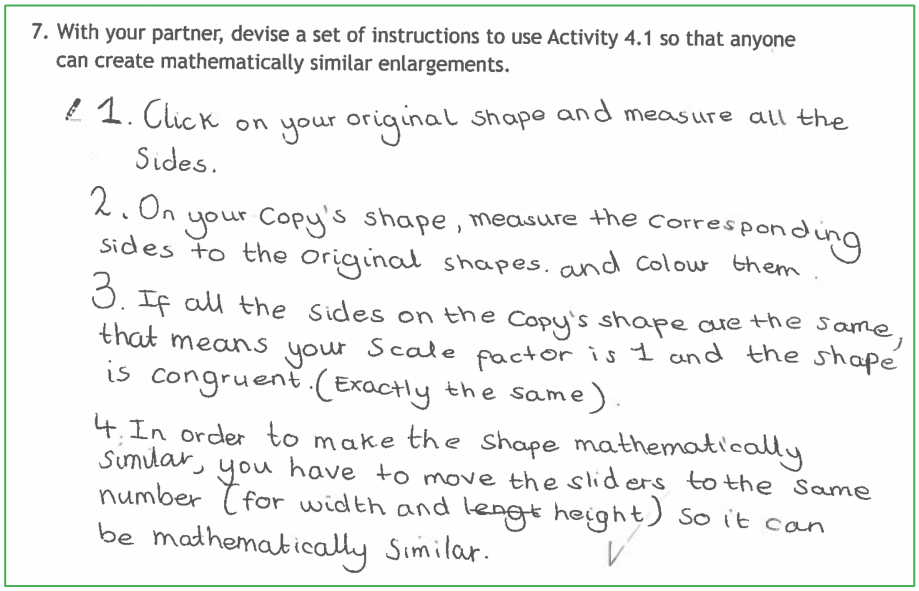
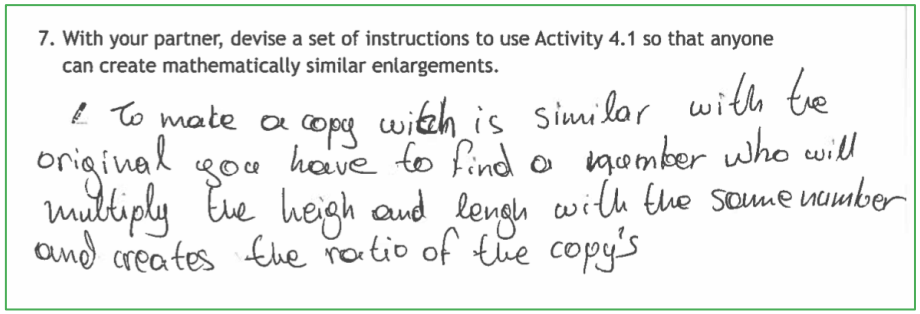
Devise a set of instructions so that anyone can create mathematically similar enlargements."(Inv 4, Q 7)


7. With your partner, devise a set of instructions to use Activity 4.1 so that anyone can create mathematically similar enlargements.

1) measure the ~~congruent~~ corresponding sides of the shape
2) Put slider 1 to any number you wish.
3) Put slider 2 to the same number you put slider 1 to
4) You got a mathematically similar shape.


7. With your partner, devise a set of instructions to use Activity 4.1 so that anyone can create mathematically similar enlargements.

1. Click on your original shape and measure all the sides.
2. On your Copy's shape, measure the corresponding sides to the original shapes. and colour them.
3. If all the sides on the Copy's shape are the same, that means your scale factor is 1 and the shape is congruent. (Exactly the same).
4. In order to make the shape mathematically similar, you have to move the sliders to the same number (for width and ~~lengt~~ height) so it can be mathematically similar.


7. With your partner, devise a set of instructions to use Activity 4.1 so that anyone can create mathematically similar enlargements.

To make a copy with is similar with the original you have to find a number who will multiply the heigh and lengh with the same number and creates the ratio of the copy's

- How might using the Activity 4.1 software help to critique these instructions?

What is the relationship between corresponding angles in mathematically similar shapes?”(Inv 5, Q2 3)

2. Given what you know so far, what is the relationship between corresponding angles in mathematically similar shapes?

The corners have the same degree in every corner
Mathematicly similar shapes have always equal corresponding angles

3. Why would that be true?

~~Because if all corners are same then the sides have to be same~~
If the corresponding angles are not equal, the shapes looks warped

2. Given what you know so far, what is the relationship between corresponding angles in mathematically similar shapes?

They stay the same.

3. Why would that be true?

Because you change the width and the height by the same amount.

2. Given what you know so far, what is the relationship between corresponding angles in mathematically similar shapes?

they are ~~close~~ nearly the same to the original

3. Why would that be true?

because then it will not be mathematicaly similar

- How will you use the software to enable pupils to respond to this challenging set of questions?