Area and Perimeter Prior Assessment Question 7

Objective: I can find the area of triangles using the formula.

M6. calculate the area of parallelograms and triangles

Teacher Input Ideas:

Ask each child to draw a 10 cm by 10cm square on to a piece of paper and a rectangle 4 cm by 6 cm (application on measuring skills) and cut these out ready to work with.

Let the children explore. Can you make a triangle out of your square? How did you make it? Most children will split the square directly across diagonally. Encourage the children to notice that they now have 2 triangles the same size. Now encourage the children to establish that one triangle is half of the square. So, if the square was 10 by 10, what was the area of the square? What do you think the area of the triangle is now then? How did you work this out? How can you prove that you are right?

Explore with a rectangle and different types of triangle (for example encourage the children to think of others not just right angled ones, see example below).
Establish with the children that with any tringle we can create a square or rectangle around it and the triangle is always half of the square/rectangle

The 2 green triangles can  be put back together to make the blue triangle.

Again, the children are to discover for themselves that another triangle from the rectangle can be made and it is the same size.

Establish that the rule for a triangle = b x h ÷ 2.

You may want to discuss the difference between the height and the width/length.

Practice Activities

Purple Practice: Most suited for children who made errors in question Q7 and need to further explore how the formula is used.

Practical: the children are to be given rectangles and squares to explore how different triangles can be made. The children to use the measurements of the rectangles and squares to find the area of the triangle. Encourage the children to work out the area by multiplying the amounts, or counting the squares if using squared paper. Then the children are to be encouraged to divide this by 2 to find half of the shape.

Green Practice: Most suited for children who made errors in Question 7 and are ready to apply the use of the formula to find the area of a triangle.

On this sheet, the children are encouraged to use the amounts on the drawings to find the area by using the formula. The children also can use mental multiplication methods. Some of the results also include decimal amounts.

Yellow Practice: Most suited for children who understand the formula, however need to explore different triangles.

This activity has different types of triangles for the children to use the measurements and apply the use of the formula for triangles. Additionally, some triangles have 3 measurements on, so the children should understand which measurement is showing the height of the triangle, not the length of one side. Additionally, the children must apply their knowledge of written multiplication methods, mental multiplication, mental division and decimals in this activity.

Mastery: Encourage the children to use the information provided and what they know about squares, fractions and finding the area of a triangle.

First encourage the children to notice that if the large square was split into $\frac{1}{4}$s then there would be 4 small squares. The triangle is half of a small square. The children could cut this up or fold the square to see practically this.

So, if one length is 8 cm, how can we use this. Some children may suggest, 8 x8 and finding a $\frac{1}{4}$ (16) this would give them the area of a small square (1/4 of the large square). Encourage the children to apply the formula for finding a triangle. 16 divide by 2 = 8.

Others may suggest that the top of the triangle is half of the 8cm side. Therefore, create a small square around the triangle of 4 x 4. 16 divide by 2 = 8 cm 2.

Answers:

Green:

1) 16m2 2) 8cm2 3) 35cm2

4) 20m2 5) 7.5cm2 6)17.5mm2

challenge: encourage the children to understand that the area of the rectangle around the triangle, must have been 24. So, the children to apply knowledge of factors of 24 to find the measurements of the base and height.

1 and 24, 2 and 12, 3 and 8, 4 and 6

Yellow:

1) 17.5 m^2
2) 6.25cm^2
3) 12cm^2
4) 6cm^2
5) 6125mm^2
6) 82.5cm^2

Challenge: height 3, base 6

Mastery:

8 **cm**^{2}

BRICKWORK Mathematics

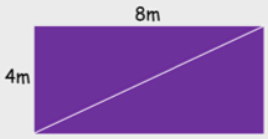
Green Practice

Lo: I use the formula for a tringle to find the area.

Look at each triangle and find the area:

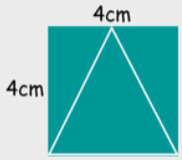
Formula = base x height ÷ 2

1)



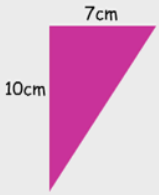
m

2)



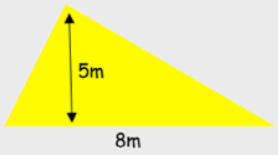
cm

3)



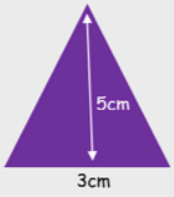
cm

4)



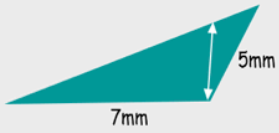
m

5)



cm

6)



mm

Challenge:

A triangle has an area of 12cm. Give 3 possibilities of what the base and height measurements could be. Prove with images.

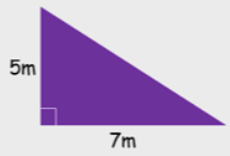
BRICKWORK Mathematics

Yellow Practice

LO: I use the formula for a triangle to find the area

Find the area of the triangles below.

1)

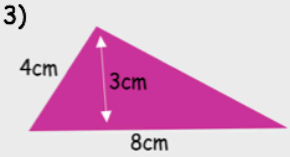


m

2)

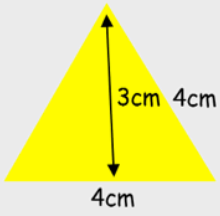
cm

3)



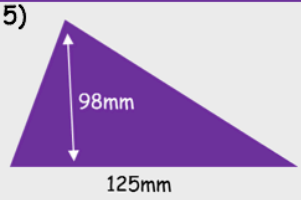
cm

4)



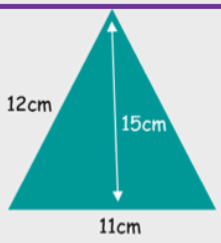
cm

5)



mm

6)



cm

Challenge:

A triangle's base is double its height.

If the area of the triangle is 9cm^2 what is the height and base of the triangle?

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Mastery

Problem Solving and Fluency

Workout the area of the triangle:

Thinking points:

- What information do you have?
- How can your knowledge of squares help?
- What do you know about the area of triangles?
- How much of the shape is the triangle?