Homework/Extension
Step 5: Formulae

National Curriculum Objectives:

Mathematics Year 6: (6A1) Express missing number problems algebraically
Mathematics Year 6: (6A2) Use simple formulae
Mathematics Year 6: (6A4) Find pairs of numbers that satisfy an equation with two unknowns
Mathematics Year 6: (6A5) Enumerate possibilities of combinations of two variables

Differentiation:

Questions 1, 4 and 7 (Varied Fluency)
Developing Work out the total cost using a given formula. Using any of the four operations with whole numbers. Some pictorials for support.
Expected Work out the total cost using a given formula. Using any of the 4 operations with some decimals or fractions. Children use order of operations knowledge.
Greater Depth Work out the total cost using a given formula. Using any of the 4 operations with fractions, percentages, whole or decimal numbers. Children use order of operations knowledge.

Questions 2, 5 and 8 (Varied Fluency)
Developing Work out the value of a shape using a given formula. Using any of the four operations with whole numbers. Some pictorials for support.
Expected Work out the value of a shape using a given formula. Using any of the 4 operations with some decimals or fractions. Children use order of operations knowledge.
Greater Depth Work out the value of a shape using a given formula. Using any of the 4 operations with fractions, percentages, whole or decimal numbers. Children use order of operations knowledge.

Questions 3, 6 and 9 (Reasoning and Problem Solving)
Developing Agree or disagree with a given statement. Using any of the four operations with whole numbers. Some pictorials for support.
Expected Agree or disagree with a given statement. Using any of the 4 operations with some decimals or fractions. Children use order of operations knowledge.
Greater Depth Agree or disagree with a given statement. Using any of the 4 operations with fractions, percentages, whole or decimal numbers. Children use order of operations knowledge.

More Year 6 Algebra resources.

Did you like this resource? Don't forget to review it on our website.

Formulae

1. The price for a design to be printed on a hat varies, depending on the number of colours used.

The formula below is used to calculate the cost of the printing service:

Price = £1 x number of colours + £2

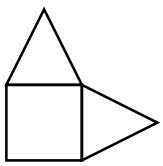
What is the price for printing a design that includes 5 colours?

D

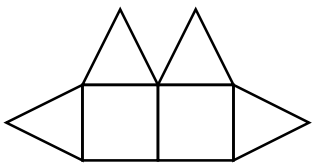
VF
HW/Ext

2. Elliot is creating designs using two different shapes.

He gives each shape a value.



Total value = 21



Total value = 42

The formula to create the shapes is always 2 triangles + 1 square, written $2t + 1s$.

If $s = 5$, what is the value of t?

$s = 5$

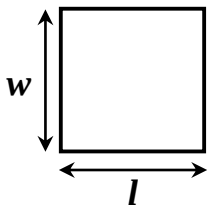
$t = ?$

D

VF
HW/Ext

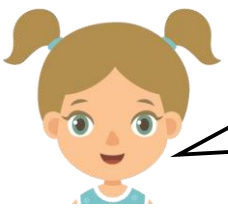
3. Tia is trying to work out the area of the square shown.

Both w and l are whole numbers between 5cm and 15cm.



Not to scale

She says,



The formula to work out the area of a square is $a = w \times l$.

The area of the square could be $12cm^2$.

Is Tia correct? Explain why.

D

RPS
HW/Ext

Formulae

4. The price for a design to be printed on a hooded jacket varies, depending on the number of colours used.

The formula below is used to calculate the cost of the printing service:

Price = 85p x number of colours + £1.75

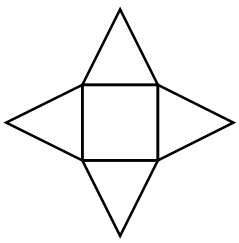
What is the price for printing a design that includes 6 colours?

E

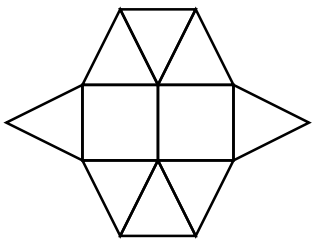
VF
HW/Ext

5. Ellan is creating designs using two different shapes.

She gives each shape a value.



Total value = 30



Total value = 60

The formula to create the shapes is always 4 triangles + 1 square, written $4t + 1s$.

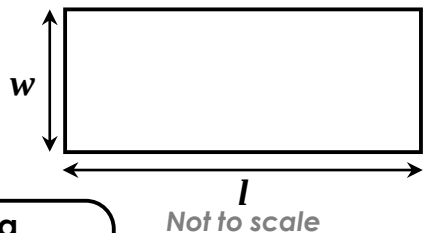
If $s = 8$, what is the value of t?

E

VF
HW/Ext

6. Noah is trying to work out the area of the rectangle shown.

w is a decimal number between 8.5cm and 10cm.
l is a whole number between 13.5cm and 19cm.



Not to scale

He says,

The formula to work out the area of a rectangle is $a = w \times l$.

The area of the rectangle could be 136cm^2.

Is Noah correct? Explain why.

E

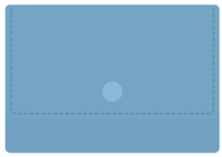
RPS
HW/Ext

Formulae

7. The price for a design to be printed on a bag varies, depending on the number of colours used.

The formula below is used to calculate the cost of the printing service:

Price = £1.54 x number of colours + £2.02



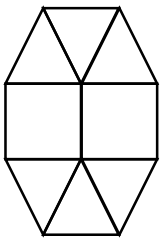
An extra 10% is then added to the final cost of the service.
What is the total price for printing a design that includes 7 colours?

GD

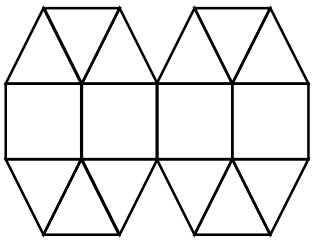
VF
HW/Ext

8. Sarah is creating designs using two different shapes.

She gives each shape a value.



Total value = 12



Total value = 24

The formula to create the shapes is always 6 triangles + 2 squares, written $6t + 2s$.

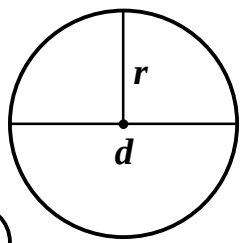
If $s = 0.75$, what is the value of t?

GD

VF
HW/Ext

9. Hector is trying to work out the radius of the circle shown.

The circumference of the circle is a whole number less than 24cm.



Not to scale

He says,

The formula to work out the radius of a circle is r = circumference ÷ (2 x 3.14)

The radius of the circle could be 3.8cm when rounded to 1 decimal place.

Is Hector correct? Explain why.

GD

RPS
HW/Ext

Homework/Extension
Formulae

Developing

1. £7
2. 8
3. Various answers, for example:
No. Tia has used a measurement of 6cm for both the width and length of the square, but she has added them together, rather than multiplying them. If the width and length of the square were both 6cm, the area would be 6 x 6 = 36cm^2.

Expected

4. £6.85
5. 5.5
6. Various answers, for example:
No. Noah has used a measurement of 8.5cm for the width, and a measurement of 16cm for the length of the rectangle. Although the length could be correct, the width isn't as it needs to be more than 8.5cm. A possible solution is 9.5 x 16 = 152cm^2.

Greater Depth

7. £14.08
8. 1.75
9. Various answers, for example:
No. Hector has used a measurement of 24cm for the circumference of the circle, but it needs to be less than this. A possible solution is 22 ÷ (2 x 3.14) = 3.503cm (or 3.5cm when rounded to 1 decimal place).