Wednesday 3rd June
Year 5/6: Formulae

Introduction

If ★ = 20 and ☾ = 2.5, calculate:

★ + ☾ + ☾

★ x (☾ + ☾)

3☾

Introduction

If ★ = 20 and ☾ = 2.5, calculate:

★ + ☾ + ☾ 20 + 2.5 + 2.5 = 25

★ x (☾ + ☾) 20 x (2.5 + 2.5) = 100

3☾ 3 x 2.5 = 7.5

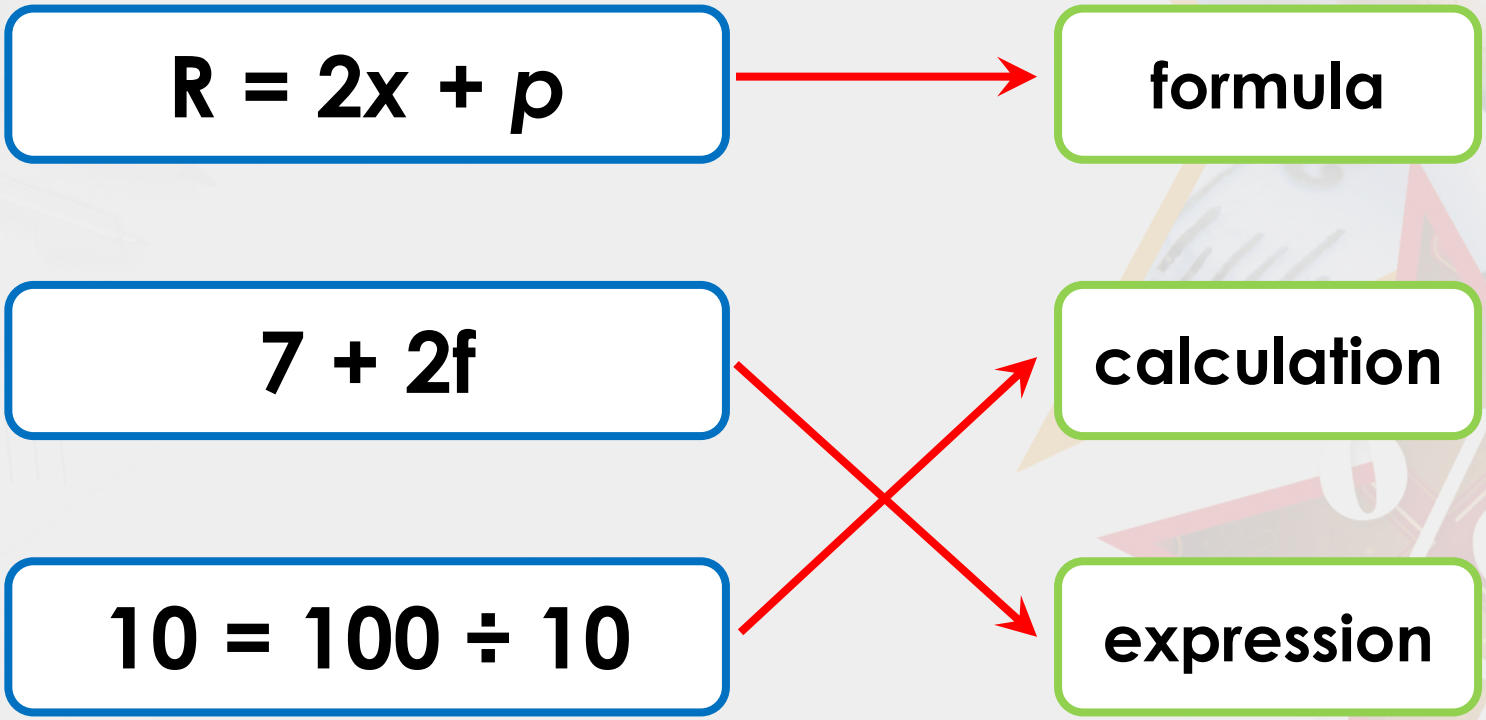
Varied Fluency 1

Match each box on the left to the correct label.

$R = 2x + p$	formula
$7 + 2f$	calculation
$10 = 100 \div 10$	expression

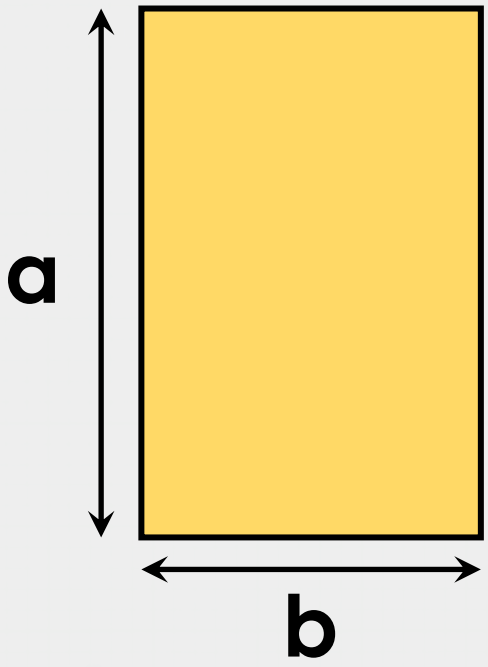
Varied Fluency 1

Match each box on the left to the correct label.



Varied Fluency 2

Work out the perimeter (P) of this shape using the formula P = 2a + 2b, if a = 2.5cm and b = 3.5cm.



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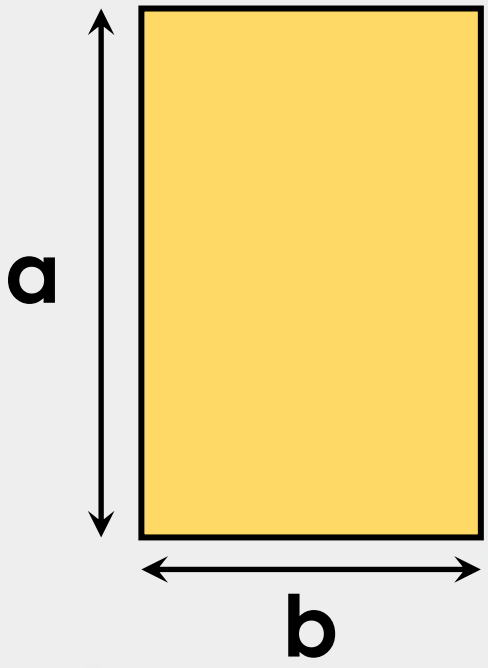

12cm

Varied Fluency 3

Circle the correct formula for finding the area of a shape (A).

$A = b \times c$

$A = b + b + c + c$

$A = b \div c$

Varied Fluency 3

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Varied Fluency 4

A window cleaner is deciding how to charge for their services. They decide the price should be set at £1.20 per window (w) and £0.40 per mile (m) travelled.

Expressed as the formula:

$$C = (1.20 \times w) + (0.4 \times m)$$

A house has 10 windows and involves 5 miles travel. How much should the company charge?

Varied Fluency 4

A window cleaner is deciding how to charge for their services. They decide the price should be set at £1.20 per window (w) and £0.40 per mile (m) travelled.

Expressed as the formula:

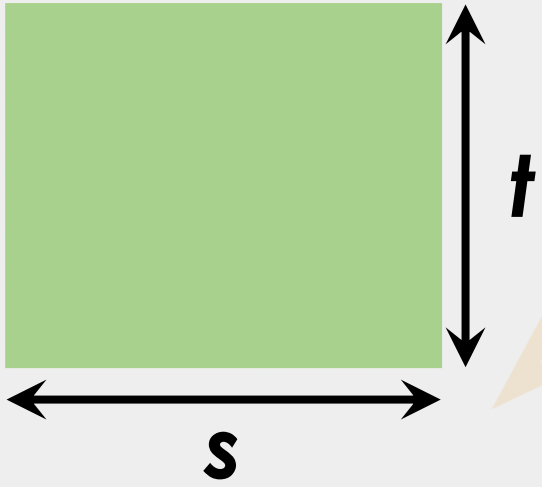
$$C = (1.20 \times w) + (0.4 \times m)$$

A house has 10 windows and involves 5 miles travel. How much should the company charge?

$C = (1.20 \times 10) + (0.4 \times 5) = 12 + 2 = £14$

Problem Solving 1

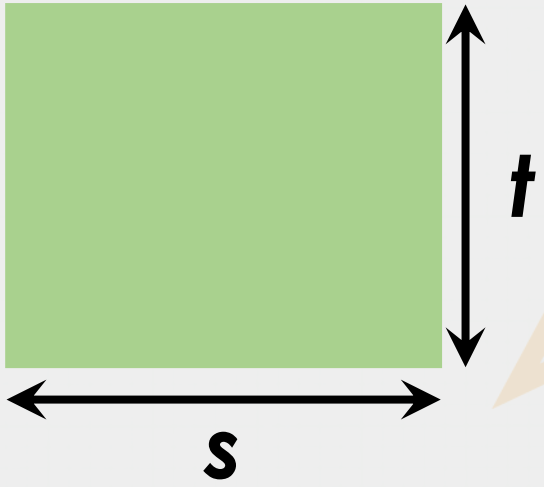
Write a formula for the area of this shape.



Use your formula to work out the area if s = 3.5cm and t = 4cm.

Problem Solving 1

Write a formula for the area of this shape.



Use your formula to work out the area if s = 3.5cm and t = 4cm.

$$a = s \times t = 3.5\text{cm} \times 4\text{cm} = 14\text{cm}^2$$

Reasoning 1

Here is a formula for amount of fabric needed (F) to make a pair of curtains.

$$F = 2w \times h$$

A window is 5.4 metres wide (w) and 1 metre high (h). Jamie has $4m^2$ of fabric.

Does Jamie have enough fabric? Convince me!

Reasoning 1

Here is a formula for amount of fabric needed (F) to make a pair of curtains.

$$F = 2w \times h$$

A window is 5.4 metres wide (w) and 1 metre high (h). Jamie has $4m^2$ of fabric.

Does Jamie have enough fabric? Convince me!

Jamie does not have enough fabric because…

Reasoning 1

Here is a formula for amount of fabric needed (F) to make a pair of curtains.

$$F = 2w \times h$$

A window is 5.4 metres wide (w) and 1 metre high (h). Jamie has $4m^2$ of fabric.

Does Jamie have enough fabric? Convince me!

Jamie does not have enough fabric because:

$F = (2 \times 5.4) \times 1 = 10.8 \times 1 = 10.8m^2$

Reasoning 2

The children's pocket money (p) is calculated by halving their age (a) and adding 10.

Which two formulae represent this?

A. $p = 0.5a + 10$

B. $p = 2a + 10$

C. $p = \frac{a}{2} + 10$

Explain how you know.

Reasoning 2

The children's pocket money (p) is calculated by halving their age (a) and adding 10.

Which two formulae represent this?

A. $p = 0.5a + 10$

B. $p = 2a + 10$

C. $p = \frac{a}{2} + 10$

Explain how you know.

A and C because…

Reasoning 2

The children's pocket money (p) is calculated by halving their age (a) and adding 10.

Which two formulae represent this?

A. $p = 0.5a + 10$

B. $p = 2a + 10$

C. $p = \frac{a}{2} + 10$

Explain how you know.

A and C because finding a half can be achieved by multiplying by 0.5 or dividing by 2.

Year 5 and Year 6 Developing

1a. Match each box on the left to the correct label.

P = 2a + 2b	formula
36 + 56 = 92	calculation

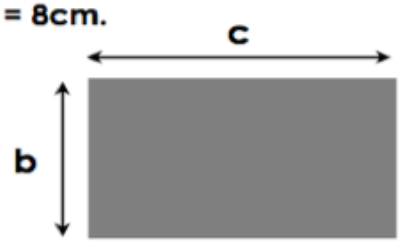
6 VF

1b. Match each box on the left to the correct label.

30 = 16 + 14	formula
A = c x d	calculation

6 VF

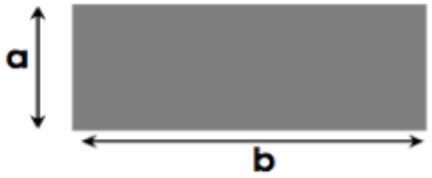
2a. Work out the area (A) of this shape using the formula A = b x c, if b = 5cm and c = 8cm.



Not to scale

6 VF

2b. Work out the perimeter (P) of this shape using the formula P = 2a + 2b, if a = 4cm and b = 9cm.



Not to scale

6 VF

3a. Circle the correct formula for doubling a number.

$D = n \times n$

$D = 2n$

$D = \frac{n}{2}$

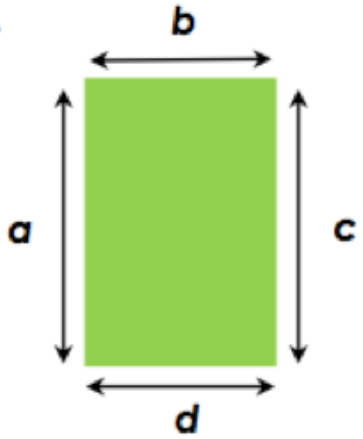
3b. Circle the correct formula for halving a number.

$H = n \div n$

$H = 2n$

$H = n \div 2$

1a. Write a formula for the perimeter of the shape.

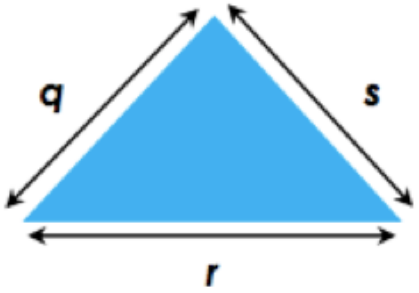


Use your formula to work out the perimeter if a = 9cm, c = 9cm, b = 2cm and d = 2cm.

Not to scale

6 PS

1b. Write a formula for the perimeter of the shape.



Use your formula to work out the perimeter if q = 3cm, s = 3cm and r = 4cm.

Not to scale

6 PS

2a. Here is a formula for the amount of wood to buy when building a shed (S).

$$S = 2 \times w$$

Hamish needs a shed 6m wide (w). He has 20m of wood.

Does Hamish have enough wood? Convince me!

2b. Here is a formula for the amount of tiles needed to cover a wall (T).

$$T = w \times 2$$

A wall is 14m wide (w). Lucie has 24 tiles to cover the wall.

Does Lucie have enough tiles? Convince me!

Year 6 Expected

5a. Match each box on the left to the correct label.

9 + 3y	formula
V = 4r + s	expression
25 = 100 ÷ 4	calculation

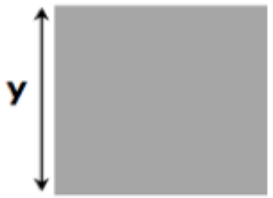
6 VF

5b. Match each box on the left to the correct label.

27 – f	formula
35 ÷ 7 – 3 = 2	expression
R = 2h x 4	calculation

6 VF

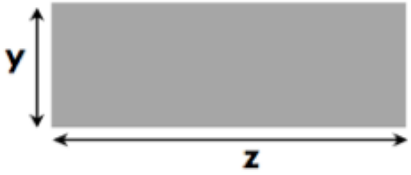
6a. Work out the perimeter (P) of this shape using the formula P = 4y, if y = 2.3cm.



Not to scale

6 VF

6b. Work out the perimeter (P) of this shape using the formula P = 2(y + z), if y = 1.5cm and z = 5.2cm.



Not to scale

6 VF

7a. Circle the correct formula for finding a squared number.

$a = 2b$

$a = b \times b$

$a = \frac{b}{2}$

6 VF

7b. Circle the correct formula for finding 25% of a number.

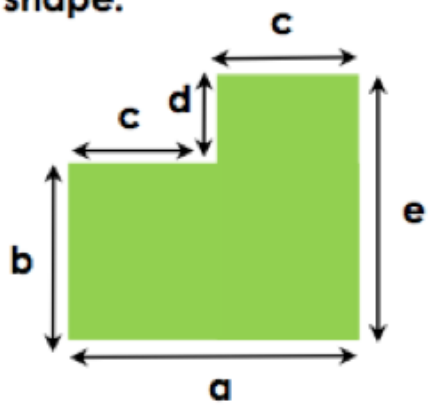
$a = n \div 25$

$a = 0.25n$

$a = \frac{n}{25}$

6 VF

4a. Write a formula for the perimeter of the shape.

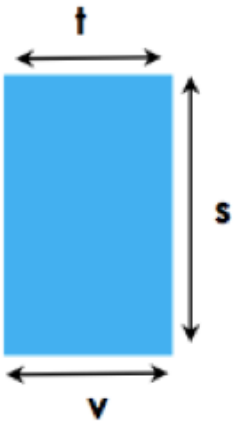


Use your formula to work out the perimeter if a = 10cm, b = 6cm, c = 4cm, d = 3cm and e = 8cm.

Not to scale

6 PS

4b. Write a formula for the area of the shape.



Use your formula to work out the area if s = 9m, t = 6m and v = t.

Not to scale

6 PS

5a. Here is a formula for the amount of paint needed (P) to paint a wall.

$$P = w \times 50ml$$

A wall is 13m wide (w). Deni has 650ml of paint.

Does Deni have enough paint? Convince me!

6 R

5b. Here is a formula for the amount of pet food (F) needed over 2 months.

$$F = w \times m$$

A puppy weighs 6kg (w) and is 8 months old (m). His owner plans to feed him 40kg of food over the next 2 months.

Does his own have enough pet food? Convince me!

6 R

Year 6 Greater Depth

9a. Match each box on the left to the correct label.

5(g – m)	formula
S = d ÷ t	expression
C = 2r²	calculation
72 = (12 x 3) x 2	

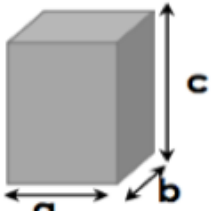
6 VF

9b. Match each box on the left to the correct label.

L = 4h x 0.5	calculation
P = 2(a x b)	expression
3(p – 3)	formula
-23 = 20 – 43	

6 VF

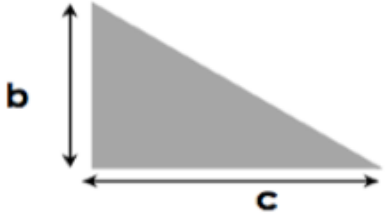
10a. Work out the volume (V) of the shape below using formula V = a x b x c, if a = 3cm, b = 2cm and c = 5.5 cm.



Not to scale

6 VF

10b. Work out the area (A) of the shape below using the formula A = $\frac{(b \times c)}{2}$, if b = 3.2cm And c = 5cm.



Not to scale

6 VF

11a. Circle the correct formula for doubling a number and finding 45%.

$a = 2n \times 0.45$

$a = n \times 2.45$

$a = \frac{2n}{0.45}$

6 VF

11b. Circle the correct formula for finding 125% of a number.

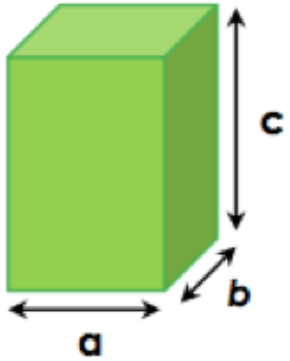
$a = n \div 12.5$

$a = 0.125n$

$a = n + 0.25n$

6 VF

7a. Write a formula for the volume of the shape.



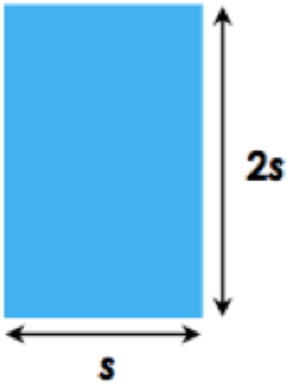
Use your formula to work out the area if $a = 6cm$, $b = \frac{a}{2}$, $c = 2a$.

GD

Not to scale

6 PS

7b. Write a formula for the area of the shape.



Use your formula to work out the area if $s = 8cm$.

GD

Not to scale

6 PS

8a. Here is a formula for the minimum amount of exercise in minutes (e) that a puppy needs each day.

$$e = \frac{(w + a)}{2}$$

A puppy weighs 8kg (w) and is 10 months old (a). Her owner plans to walk her for 10 minutes each day.

Is this enough? Convince me!

8b. Here is a formula for the amount of paving slabs needed to create a patio (p).

$$p = (l \times w) \times 5$$

The area is 2.5m in length (l) and 4m in width (w). Katie buys 58 paving slabs.

Does she have enough? Convince me!