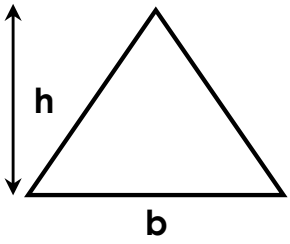
Formulae

7a. Yusuf is calculating the area of a triangle.

He is using the formula $a = \frac{1}{2} b \times h$.



When b = 12cm, he calculates that a = 66cm^2.

What is the value of h?

GD

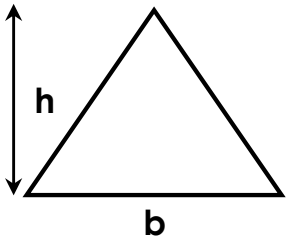
Not to scale

PS

Formulae

7b. Jade is calculating the area of a triangle.

She is using the formula $a = \frac{1}{2} b \times h$.



When h = 12cm, she calculates that a = 132cm^2.

What is the value of b?

GD

Not to scale

PS

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

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

A puppy weighs 8kg (w) and is 16 months old (a). Her owner plans to walk her for half an hour each day.

Is this enough? Convince me.

GD

R

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

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

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

Does she have enough? Convince me.

GD

R

9a. The height to set a desk (d) for optimum working conditions is half a person's height (h) then subtract 30.5cm.

Which two formulae represent this?

A. $d = (h \div 2) - 30.5$

B. $d = \frac{h - 30.5}{2}$

C. $d = \frac{h}{2} - 30.5$

Explain how you know.

GD

R

9b. To make chocolate milk (c), you need 5 cups of milk (m) and a bar of chocolate (n) halved.

Which two formulae represent this?

A. $c = 5m + n \div 2$

B. $c = 5m + (n \div 2)$

C. $c = \frac{n + 5m}{2}$

Explain how you know.

GD

R

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Reasoning and Problem Solving Formulae

Developing

1a. 10cm

2a. Various answers, for example:
No; he would need to have 4 bags of flour in order to have enough, because 2 x 2 = 4.

3a. A. This shows 5 lots of water and 2 lots of bleach, which matches the formula.

Expected

4a. 3cm

5a. Various answers, for example:
Yes; she has 650ml, which is how much she needs in order to paint the wall. This is because 50 x 13 = 650.

6a. A and C. B shows time being divided by distance, which is incorrect.

Greater Depth

7a. 11cm

8a. Various answers, for example:
No; the puppy needs at least 64 minutes of exercise each day, because 8 x 16 = 128; 128 ÷ 2 = 64.

9a. A and C. B shows everything being divided by 2, which will result in the incorrect height of the desk.

Reasoning and Problem Solving Formulae

Developing

1b. 16cm

2b. Various answers, for example:
No; she needs to plant another tulip in order to have planted enough, because there are 2 roses, so there should be 6 tulips.

3b. B. This shows 6 lots of water and 1 lot of plant food, which matches the formula.

Expected

4b. 5cm

5b. Various answers, for example:
No; the owner is planning to feed the puppy 40kg of food, but he still needs another 8kg to have enough. This is because 8 x 6 = 48.

6b. B and C. A shows 2 being divided by base x height, which is incorrect.

Greater Depth

7b. 22cm

8b. Various answers, for example:
Yes; she needs 50 paving slabs in order to create the patio, because 2.5 x 4 = 10; 10 x 5 = 50.

9b. A and B. C shows both milk and chocolate being halved, which will result in the incorrect amount of milk and chocolate.

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