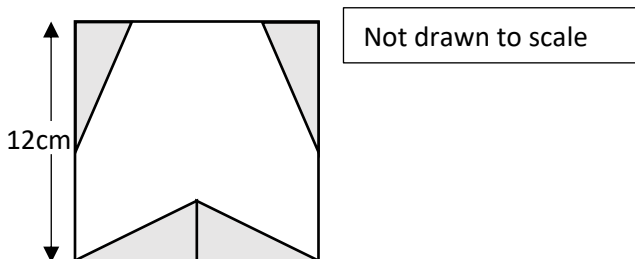




Advance Maths Problem Solving Worksheet D

Eleven Plus
Revision Books

1. The winner of the Roberttown 10km race took 33 minutes 20 seconds to complete the course. What was her average speed in metres per second during the race?
2. Bhoomi bought 40 crates of pineapples. In each crate there are 60 pineapples. She paid £12 for each crate. If Bhoomi sells all the pineapples for 50 p each, how much profit did she make?
3. In the draw $\frac{1}{10}$ of the pens are red, 20% are green and a 0.25 are black. The remaining 9 pens are blue. How many pens are there in total?
4. The square below contains four identical shaded triangles. The height of the triangles is $\frac{2}{3}$ of the length of the base. What fraction of the square is shaded?





5. Ellie is tiling a wall in her bathroom. The wall is 2.2 metres high by 4.75 metres wide. Each tile measures 20cm by 25cm. The tiles come in boxes containing 12 tiles, each box costs £24.50. How much has Ellie spent on tiles ?

Answers

1. The winner of the Roberttown 10km race took 33 minutes 20 seconds to complete the course. What was her average speed in metres per second during the race?

$$10\text{km} = 33 \text{ mins } 20 \text{ seconds} = 2,000 \text{ seconds}$$

$$\text{Average speed } 10,000\text{m} \div 2,000 \text{ seconds} = \underline{5 \text{ m/s}}$$

2. Bhoomi bought 40 crates of pineapples. In each crate there are 60 pineapples. She paid £12 for each crate. If Bhoomi sells all the pineapples for 50 p each, how much profit did she make?

$$40 \text{ crates} \times 60 \text{ pineapples} = 2,400 \text{ pineapples in total.}$$

$$40 \text{ crates @ } \pounds 12 \text{ per crate} = \pounds 480 \text{ spend by Bhoomi on pineapples}$$

$$2,400 \text{ pineapples sold @ } \pounds 0.50 \text{ each} = \pounds 1,200 \text{ earned by Bhoomi}$$

$$\text{Profit is Total earned} - \text{cost. So } \pounds 1,200 - \pounds 480 = \underline{\pounds 720 \text{ profit}}$$

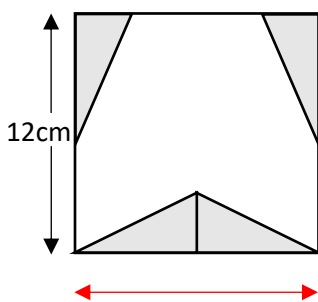
3. In the draw $\frac{1}{10}$ of the pens are red, 20% are green and a 0.25 are black. The remaining 9 pens are blue. How many pens are there in total?

$$\text{Red} = \frac{1}{10}, \text{ Green} = 20\% = \frac{1}{5}, \text{ Black} = 0.25 = \frac{1}{4}. \quad \frac{1}{10} + \frac{1}{5} + \frac{1}{4} = \frac{2}{20} + \frac{4}{20} + \frac{5}{20} = \frac{11}{20}$$

$$\text{So } \frac{9}{20} = \text{Blue} = 9. \text{ So } \frac{1}{20} = 1 \text{ and } \frac{20}{20} = \underline{20 \text{ pens in total}}$$



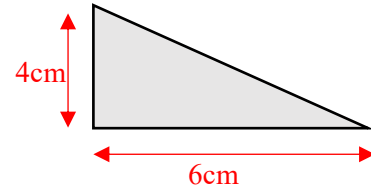
4. The square below contains four identical shaded triangles. The height of the triangles is $\frac{2}{3}$ of the length of the base. What fraction of the square is shaded?



Not drawn to scale

Outer is square, so all sides are the same length=12cm.

Therefore, base of triangle = 6cm

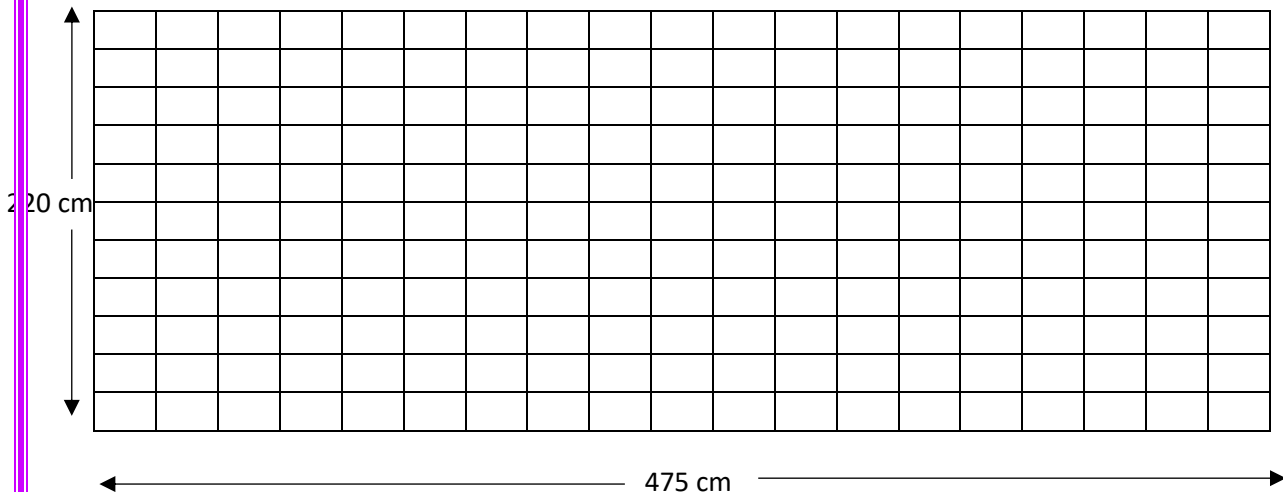


As height of triangle is $\frac{2}{3}$ of base, height is 4cm.

Area of triangle = base x height / 2
 $6 \times 4 / 2 = 12\text{cm}^2$

Area of triangles $12\text{cm}^2 \times 4 = 48\text{cm}^2$. Area of square $12\text{cm} \times 12\text{cm} = 144\text{cm}^2$. So $48/144 = \frac{1}{3}$

5. Ellie is tiling a wall in her bathroom. The wall is 2.2 metres high by 4.75 metres wide. Each tile measures 20cm by 25cm. The tiles come in boxes containing 12 tiles, each box costs £24.50. How much has Ellie spent on tiles ?



 Each tiles 20cm high and 25cm wide.

So, Ellie needs $220\text{cm} \div 20\text{cm} = 11$ tiles high

So $11 \times 19 = 209$ tiles in total

$475\text{cm} \div 25\text{cm} = 19$ tiles across

$209 \text{ tiles} \div 12 \text{ tiles per box} = 17.42$ boxes, so Ellie needs to buy 18 boxes of tiles

$18 \text{ boxes} \times \text{£}24.50 = \text{£}441$

