

Challenge Cards (F and H)



Kyle took a survey of trees in an area of a forest.
Of all the trees that Kyle counted

$\frac{2}{5}$ were Ash trees

35% were Sycamore trees

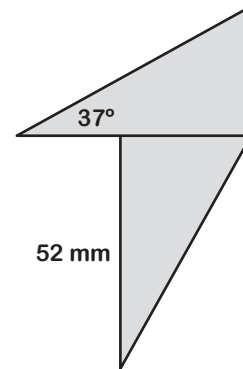
The rest were either Holly or Oak in the ratio 3:2.

20 of the trees were Holly trees.

Work out how many of the trees Kyle counted were Sycamore.

The shape is made of two congruent right angled triangles.

Find the perimeter of the shape in centimetres to 1 decimal place.



Below are four numbers.

6.31×10^5 1×10^5 805000 9.02×10^4

- Find the median of the four numbers.
Give your answer in standard form.
- Calculate the mean of the four numbers.
Give your answer as an ordinary number.
- What is the range of the four numbers?

Hazel is planting a wildflower garden from seed.

Hazel knows that she needs 160 g of seeds to cover 40 m^2 of garden. Hazel's garden is circular with a diameter of 17 m.

Wildflower seeds come in packets of 250 g for £48.

Hazel has £200 to spend. Does she have enough money to plant enough seeds to cover the whole garden? You must show how you get your answer.

Kyle took a survey of trees in an area of a forest.
Of all the trees that Kyle counted

$\frac{2}{5}$ were Ash trees

35% were Sycamore trees

The rest were either Holly or Oak in the ratio 3:2.

20 of the trees were Holly trees.

Work out how many of the trees Kyle counted were Sycamore.

$$\frac{2}{5} = 40\%$$

$$40\% + 35\% = 75\%$$

25% were Holly or Oak

3 : 2

$$30 : 20 = 50 \text{ trees were Holly or Oak}$$

$$50 \text{ trees} = 25\%$$

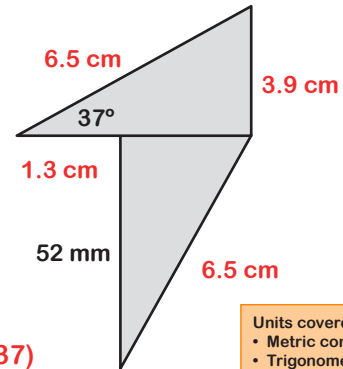
200 trees altogether

$$35\% \text{ of } 200 = 70 \text{ trees were Sycamore.}$$

Units covered:
• FDP conversion
• Ratio
• Percentage of Amounts

The shape is made of two congruent right angled triangles.

Find the perimeter of the shape in centimetres to 1 decimal place.



$$\tan(37^\circ) = \frac{o}{5.2}$$

$$o = 5.2 \times \tan(37^\circ)$$

$$o = 3.9 \text{ cm}$$

$$\cos(37^\circ) = \frac{5.2}{h}$$

$$h = \frac{5.2}{\cos(37^\circ)}$$

$$h = 6.5 \text{ cm}$$

$$5.2 - 3.9 = 1.3 \text{ cm}$$

$$\text{Perimeter} = 6.5 \times 2 + 3.9 + 5.2 + 1.3 = 23.4 \text{ cm}$$

Units covered:
• Metric conversion
• Trigonometry in right angled triangles
• Perimeter of compound shape

Below are four numbers.

$$6.31 \times 10^5 \quad 1 \times 10^5 \quad 805000 \quad 9.02 \times 10^4$$

a) Find the median of the four numbers.
Give your answer in standard form.

$$90,200 \quad 100,000 \quad 631,000 \quad 805,000$$

$$\frac{631,000 + 100,000}{2} = 365,500$$

$$3.655 \times 10^5$$

b) Calculate the mean of the four numbers.
Give your answer as an ordinary number.

$$\frac{90,200 + 100,000 + 631,000 + 805,000}{4} = 406,550$$

c) What is the range of the four numbers?

$$8.05 \times 10^5 - 9.02 \times 10^4 = 7.148 \times 10^5$$

Units covered:
• Converting standard form
• Calculating with standard form
Averages and range

Hazel is planting a wildflower garden from seed.

Hazel knows that she needs 160 g of seeds to cover 40 m² of garden. Hazel's garden is circular with a diameter of 17 m.

Wildflower seeds come in packets of 250 g for £48.

Hazel has £200 to spend. Does she have enough money to plant enough seeds to cover the whole garden? You must show how you get your answer.

Area of garden

$$\pi \times 8.5^2 = 226.98 \text{ m}^2$$

$$160 \text{ g} = 40 \text{ m}^2$$

$$10 \text{ g} = 2.5 \text{ m}^2$$

$$250 \text{ g} = 62.5 \text{ m}^2$$

$$\frac{226.98}{62.5} = 3.63168$$

Hazel will need 4 packets of seeds

$$4 \times £48 = £192$$

So, yes Hazel will have enough money.

Units covered:
• Direct proportion
• Area of a circle