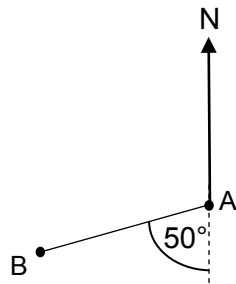


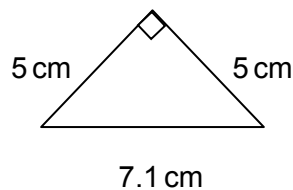
OCR 10 Mensuration (Foundation)

1. A driver is paid at a rate of £9.20 an hour. One week she earns £322.00.
How many hours did she work that week?
2. Calculate the circumference of a circle with diameter 4.5 cm.
3. Work out the bearing of B from A.



Not to scale

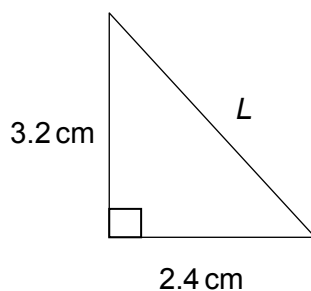
4. Calculate the area of this triangle.



Not to scale

5. $\sin x = 0.8$. Find x .

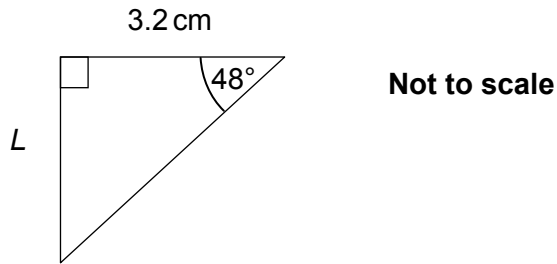
6. Calculate L .



Not to scale

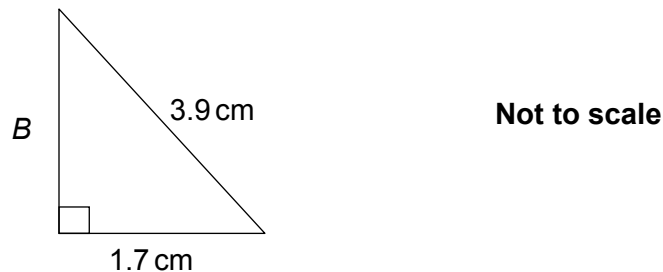
7. A map has a scale of 1 : 750.
A road is 600 m long. How long will it be on the map?
8. The volume V of a sphere is given by the formula $V = \frac{4}{3}\pi r^3$, where r is the sphere's radius.
Find the volume of a sphere with a radius of 12 cm.

9. Calculate
- L
- .



10. Calculate the surface area of a cuboid with side lengths 3.5 cm, 4 cm and 6.2 cm.

11. Fred uses Pythagoras' theorem to find
- B
- .



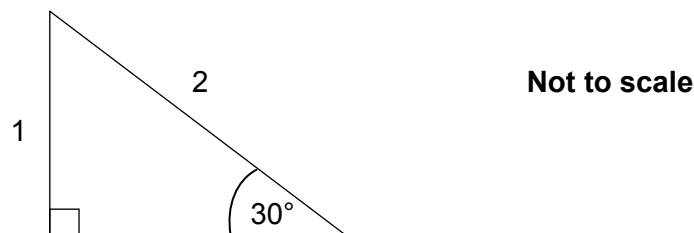
He writes: $B^2 = 3.9^2 + 1.7^2$

so $B^2 = 15.21 + 2.89 = 18.1$

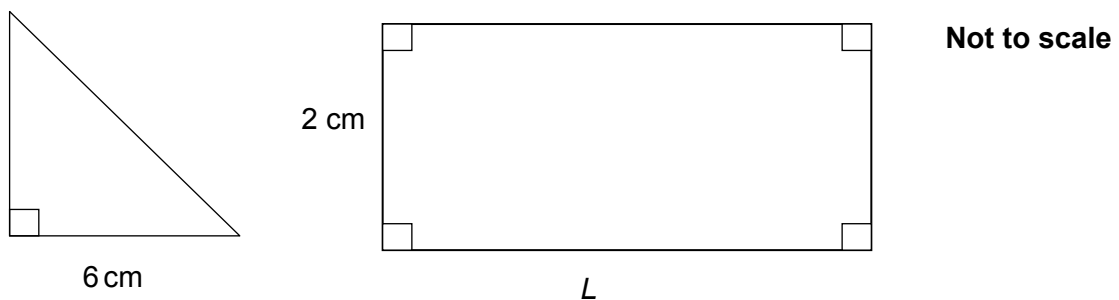
and $B = \sqrt{18.1} = 4.25$ cm to 2 decimal places.

Identify the mistake Fred has made and show how to find the correct answer.

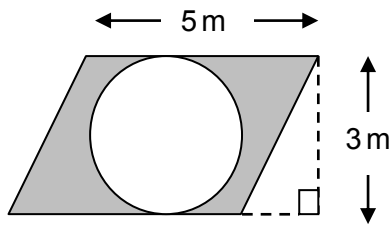
12. Using the diagram below, show that
- $\tan 30^\circ$
- is equal to
- $\frac{\sqrt{3}}{3}$
- .



13. The area of the isosceles triangle is twice the area of the rectangle.
-
- Show that the length,
- L
- , of the rectangle is 4.5 cm.

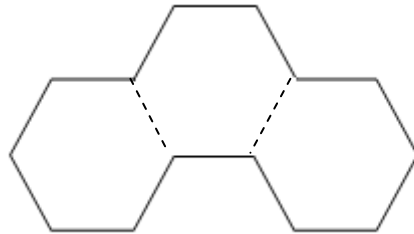


14. This shape is made of a parallelogram and a circle.
Show that the shaded area is $15 - 2.25\pi \text{ m}^2$.



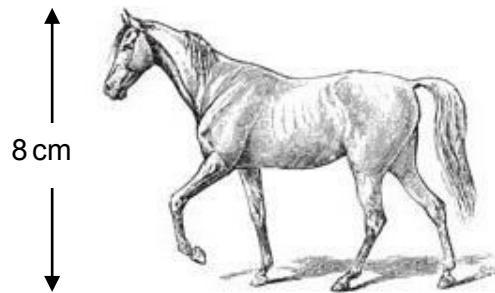
Not to scale

15. This shape is made from three regular hexagons joined together, each of side length 1.5 m.
Daljit calculates the perimeter of the shape to be $3 \times 6 \times 1.5 = 27 \text{ m}$.
Explain what Daljit has done wrong.



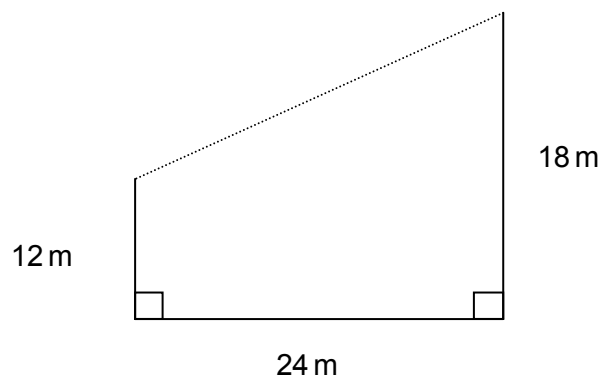
Not to scale

16. Each wheel on a bicycle has a diameter of 0.622 m.
Write an expression for the number of turns each wheel will make if the bike travels $x \text{ m}$.
17. Anne makes a model of her horse, shown below.
She has used a scale of 1 : 19. How tall is the real horse in metres?



18. The density of water is 1000 kg per m^3 . A water tank has a capacity of 8 m^3 .
Calculate the weight of water in the tank when it is half full.
19. The minute hand on a tower clock is 4.2 m long.
How far in metres does the end of the minute hand travel in 5 minutes?

20. Two vertical posts of height 12 m and height 18 m are erected 24 m apart. Find the distance between the top of the two posts.



Not to scale

Answers

1. 35

2. 14.1 cm

3. 230°

4. 12.5 cm^2

5. 53.1°

6. $3.2^2 + 2.4^2 = 16$

$\sqrt{16} = 4 \text{ cm}$

7. $\frac{600}{750} = 0.8 \text{ m or } 80 \text{ cm}$

8. $V = \frac{4}{3} \times \pi \times 12^3 = 2304\pi \text{ cm}^3 \text{ or } 7238 \text{ cm}^3$

9. $3.2 \times \tan 48^\circ = 3.6 \text{ cm}$

10. $2 \times ((3.5 \times 4) + (4 \times 6.2) + (6.2 \times 3.5))$
 $= 121 \text{ cm}^2$

11. $B^2 = 3.9^2 - 1.7^2$

Correct answer is 3.51 cm to 2 dp

12. Adjacent side $= \sqrt{2^2 - 1^2} = \sqrt{3}$

$\tan 30^\circ = \frac{o}{a} = \frac{1}{\sqrt{3}}$

Rationalising the denominator gives $\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$.

13. Area of triangle $= \frac{1}{2} \times 6 \times 6 = 18 \text{ cm}^2$.

Area of rectangle $= \frac{1}{2} \times \text{area of triangle} = \frac{1}{2} \times 18 = 9 \text{ cm}^2$.

$L = 9 \div 2 = 4.5 \text{ cm}$.

14. Area of parallelogram $= 5 \times 3 = 15 \text{ m}^2$

Area of circle $= \pi \times 1.5 \times 1.5 = 2.25\pi \text{ m}^2$

Shaded area $= 15 - 2.25\pi \text{ m}^2$

15. Daljit has included the sides inside the shape. The correct answer is 21 m.

16. $\frac{x}{0.622 \times \pi}$

17. $8 \times 19 = 152 \text{ cm} = 1.52 \text{ m}$

18. $\text{Weight} = 8 \times \frac{1}{2} \times 1000 = 4000 \text{ kg}$

19. $\frac{5}{60} \times 2 \times \pi \times 4.2 = 0.7\pi \text{ m or } 2.2 \text{ m}$

20. $24^2 + 6^2 = 612$
 $\sqrt{612} = 24.7 \text{ m}$

We'd like to know your view on the resources we produce. By clicking on ['Like'](#) or ['Dislike'](#) you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click 'Send'. Thank you.

Whether you already offer OCR qualifications, are new to OCR, or are considering switching from your current provider/awarding organisation, you can request more information by completing the Expression of Interest form which can be found here:

www.ocr.org.uk/expression-of-interest

Looking for a resource? There is now a quick and easy search tool to help find free resources for your qualification:

www.ocr.org.uk/i-want-to/find-resources/

OCR Resources: *the small print*

OCR's resources are provided to support the delivery of OCR qualifications, but in no way constitute an endorsed teaching method that is required by the Board, and the decision to use them lies with the individual teacher. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources. This formative assessment resource has been produced as part of our free GCSE teaching and learning support package. All the GCSE teaching and learning resources, including delivery guides, topic exploration packs, lesson elements and more are available on the qualification webpages. If you are looking for examination practice materials, you can find Sample Assessment Materials (SAMs) on the qualification webpage <https://www.ocr.org.uk/qualifications/gcse-mathematics-j560-from-2015/delivery-guide/delivery-guide-gmdg009-section-09-congruence-and-similarity/>

© OCR 2017 - This resource may be freely copied and distributed, as long as the OCR logo and this message remain intact and OCR is acknowledged as the originator of this work.

OCR acknowledges the use of the following content: n/a

Please get in touch if you want to discuss the accessibility of resources we offer to support delivery of our qualifications: resources.feedback@ocr.org.uk

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use simple compound units			
AO1	2	Know and apply the formula for circumference of a circle			
AO1	3	Work with bearings			
AO1	4	Know and apply the formula for area of a triangle			
AO1	5	Know and apply trigonometric ratios in a right-angled triangle			
AO1	6	Know and apply Pythagoras' theorem			
AO1	7	Use the scale of a map			
AO1	8	Calculate volume of sphere			
AO1	9	Know and apply trigonometric ratios to find a length			
AO1	10	Calculate surface area of a cuboid			
AO2	11	Know and apply Pythagoras' theorem			
AO2	12	Know and apply Pythagoras' theorem and trigonometric ratios			
AO2	13	Find a dimension given the area			
AO2	14	Find area of composite shapes			
AO2	15	Find perimeter of composite shapes			
AO3	16	Use standard units of measurement in algebraic context			
AO3	17	Interpret a scale drawing			
AO3	18	Apply formula: density = mass ÷ volume			
AO3	19	Calculate a length of a sector given angle and radius			
AO3	20	Know and apply Pythagoras' theorem			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use simple compound units			
AO1	2	Know and apply the formula for circumference of a circle			
AO1	3	Work with bearings			
AO1	4	Know and apply the formula for area of a triangle			
AO1	5	Know and apply trigonometric ratios in a right-angled triangle			
AO1	6	Know and apply Pythagoras' theorem			
AO1	7	Use the scale of a map			
AO1	8	Calculate volume of sphere			
AO1	9	Know and apply trigonometric ratios to find a length			
AO1	10	Calculate surface area of a cuboid			
AO2	11	Know and apply Pythagoras' theorem			
AO2	12	Know and apply Pythagoras' theorem and trigonometric ratios			
AO2	13	Find a dimension given the area			
AO2	14	Find area of composite shapes			
AO2	15	Find perimeter of composite shapes			
AO3	16	Use standard units of measurement in algebraic context			
AO3	17	Interpret a scale drawing			
AO3	18	Apply formula: density = mass ÷ volume			
AO3	19	Calculate a length of a sector given angle and radius			
AO3	20	Know and apply Pythagoras' theorem			