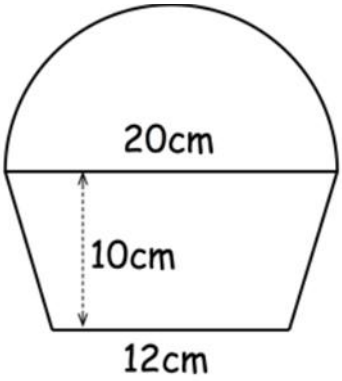
Round 1

Question 1

A design is made using a semi-circle and a trapezium. Find the area of this design. Give your answer to two decimal places



Question 2

Factorise

$$x^2 - \frac{7}{6}x + \frac{1}{3}.$$

Round 2

Question 1

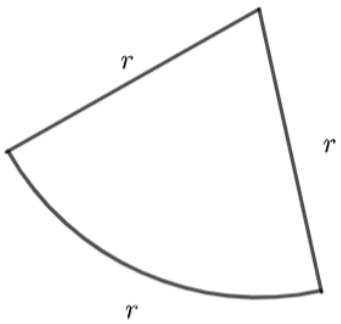
Question 1

By expressing c in terms of a, b and d, evaluate c , when $d = 5, a = 9$ and $b = 14$

$$d = \sqrt{\frac{a-b}{ac}}$$

Question 2

A circle has radius $r\ cm$, arc length $r\ cm$ and area $r\ cm^2$



Find the value of r.

Round 3

Question 1

Factorise fully:

$$27p^3q - 75pq$$

Question 2

The angles of a quadrilateral are in the ratio 3: 4: 5: 6.

What is the difference between the largest angle and the smallest angle?

Round 4

Question 1

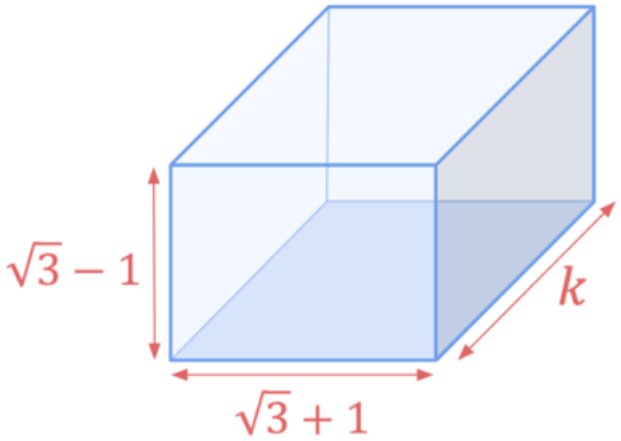
Two trains are 600 km apart and are traveling toward each other. Train A is moving at 120 km/h, and Train B is moving at 180 km/h. A bird starts flying from Train A toward Train B at a constant speed of 120 km/h. When it reaches Train B, it immediately turns around and flies back toward Train A, continuing this pattern until the trains meet.

Hint: find the bird's travel time. How far does the bird travel?

Question 2

The volume of a cuboid is $16cm^3$.

Calculate the value of k in cm.



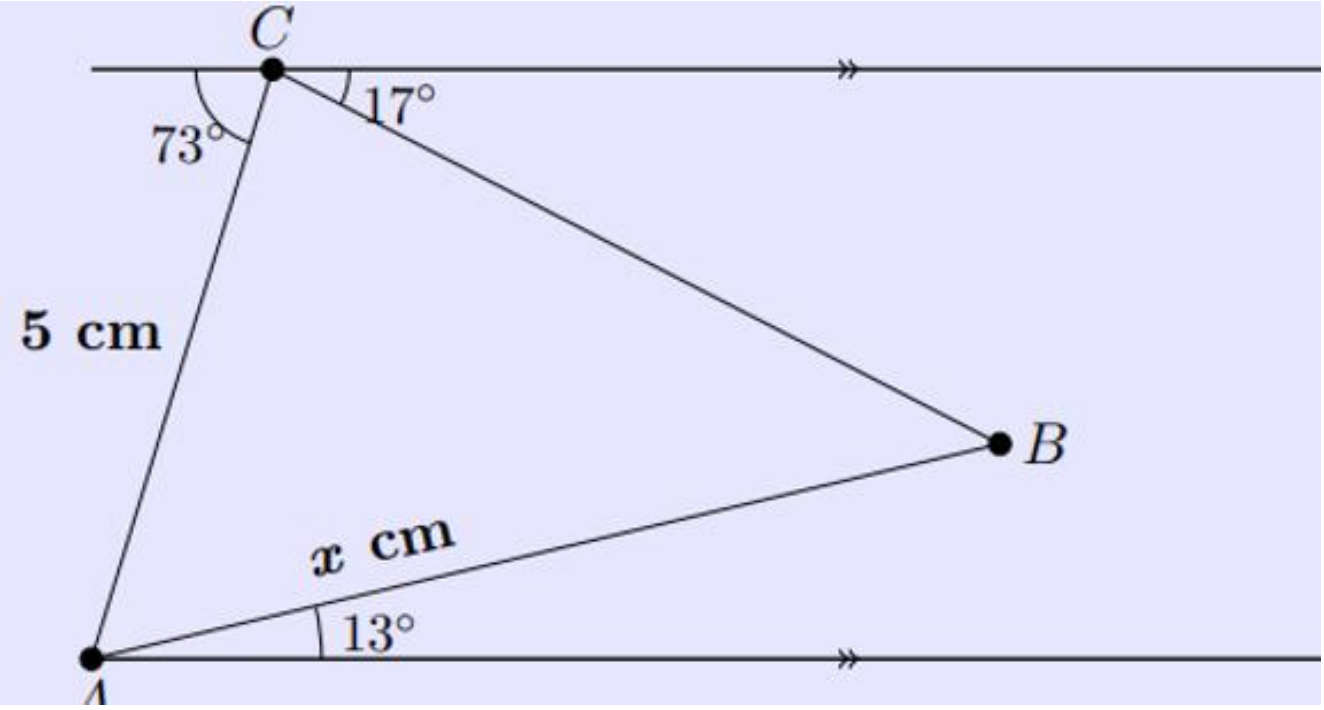
Round 5

Question 1

A train is 150 metres long and moving at a speed of 54 km/h. It takes 30 seconds to pass a platform. What is the length of the platform?

Question 2

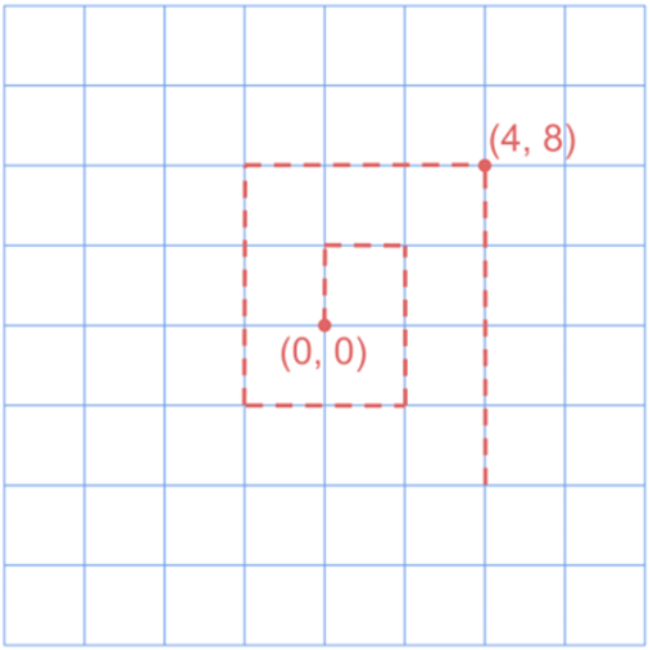
In the diagram, triangle ABC lies between two parallel lines as shown. If segment AC has length 5cm, what is the length in cm of segment AB?



Round 6

Question 1

The diagram shows the path of a snake spiralling its way out from the origin. At which coordinates will the snake leave this grid if it continues on its current spiralling path?



Question 2

Solve the equation

$$\frac{x-1}{3} - \frac{5x+2}{4} = 1.$$

Round 7

Question 1

$9(2x + 5) + 2(3x + b) = ax + 23$

Work out the values of a and b in the equation.

Question 2

A point with coordinates $(a, 2a)$ lies in the 3rd quadrant and on the curve given by the equation $3x^2 + y^2 = 28$. Find a.

Question 3

John had a box of chocolates. On the first day he ate exactly half of the chocolates and gave one to his little sister. On the second day he ate exactly half of the remaining chocolates and gave one to his little sister. On the third day he ate exactly half of the remaining chocolates and gave one to his little sister, at which point no chocolates remained. How many chocolates were in the box at the start?

Question 4

There are 26 dogs and n cats in a neighbourhood. If two pets from the neighbourhood are selected at random, the probability that both pets are cats is $\frac{1}{14}$. Calculate the total number of pets in the neighbourhood.

Round 8

Question 1

A golfer hits 80 drives during a practice session. Out of these, 52 land in the fairway, 18 land in the rough, and the rest are lost. If the golfer improves their fairway accuracy by 25%, how many drives will land in the fairway out of the next 80 drives?

Question 2

The line passes through the points $P(2,3))$ and $Q(5,7)$
The line is translated 4 units to the left and 3 units up.

What is the equation of the new line?

Question 3

In the equilateral triangle ABC, a circle is inscribed such that it touches all three sides of the triangle. The vertex A of the triangle corresponds to 12 o'clock on a clock face, vertex B corresponds to 4 o'clock, and vertex C corresponds to 8 o'clock. All sides are 10cm in length.

Calculate the radius of the inscribed circle, to 2 decimal places.

Question 4

The weekly wages (in Euros) of 8 employees at a company are as follows: 450, 500, 550, 600, x, 480, 520, 550. If the mean weekly wage is 510 euros, what is the value of the median?

Answers

Round 1	
1	$317.08\ cm^2$
2	$\left(x-\frac{2}{3}\right)\left(x-\frac{1}{2}\right)$ Or $(3x-2)(2x-1)$
Round 2	
1	$a=\frac{2(s-ut)}{t^2}$ Or $a=\frac{s-ut}{\frac{1}{2}t^2}$
2	$r=2cm$ (units not required)
Round 3	
1	$3pq(3p-5)(3p+5)$
2	60°(degree symbol not required
Round 4	
1	240km
2	$k=8cm$
Round 5	
1	$300m$ (units not required)
2	$10cm$ (units not required)
Round 6	
1	
2	$x=-2$
Round 7	
1	$a=24, b=-11$
2	$a=-2$
3	14
4	36 pets
Round 8	
1	65 fairway drives
2	$4x-3y-26=0$
3	2.89cm
4	€510

Tie Break 1

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Answers to Tie Break 1

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π Quiz National Final 2025 – 29th March, Portlaoise

Tie Break 2

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Answers to Tie Break 2

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