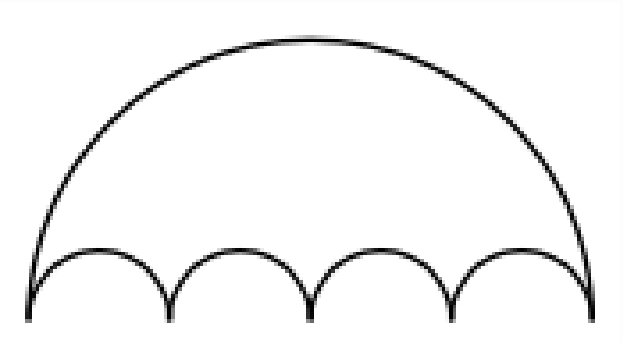
Round 1

Question 1

A lottery win is shared between three people. Marcin gets 20% more than Jane, and 25% more than Charlie. Jane's share is €3,600. What is the total prize money?

Question 2

The figure below was constructed by taking a semicircle with diameter 64cm and replacing the diameter with four semicircles each having equal diameter.



What is the perimeter of the figure in terms of π?

Round 2

Question 1

A group of **N** students doing an art project used red, blue, and yellow paint. Every student used at least one colour, and some students used more than one colour.

- The yellow paint was used by a total of 46 students.
- The red paint was used by a total of 69 students.
- The blue paint was used by a total of 104 students.
- Exactly 14 students used both yellow and blue and did not use red.
- Exactly 13 students used both yellow and red and did not use blue.
- Exactly 19 students used both blue and red and did not use yellow.
- Exactly 16 students used all three colours.

What is the value of ***N***?

Question 2

What is the value of x ?

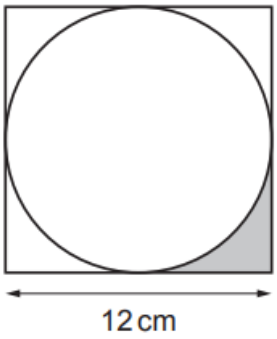
x is an integer. Find the possible values of x when

$$4x - 3 > 5 \text{ and } 6x + 2 < 32$$

Round 3

Question 1

The diagram shows a circle inside a square of side 12cm. Work out the percentage of the square that is shaded to the nearest percentage.



Question 2

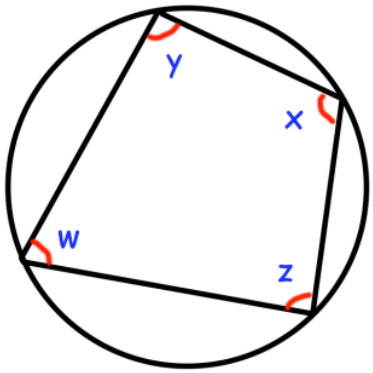
A positive integer ***n*** between 10 and 99, inclusive, is chosen at random. If every such integer is equally likely to be chosen, what is the probability that the sum of the digits of ***n*** is a multiple of 7?

Round 4

Question 1

$$w : x = 2 : 3$$

$$x : y = 9 : 8$$



Find the value of z°

Question 2

A stack of 10 paper cups is 13 cm high.

Another stack of 30 of the same type of paper cups is 23 cm high.

How high (in cm) would a stack of 100 paper cups be?

Round 5

Question 1

Brad has a six-sided die with sides numbered 1 through 6.

Brad throws the die twice and writes down the numbers.

What is the probability that the second number is greater than the first?

Question 2

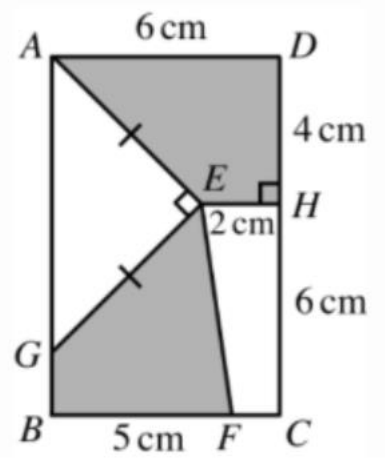
The expression $2(x-3)^2-12$ can be written as ax^2+bx+c for some numbers *a,b,c.*

What is the value of

$$10a-b-4c\,?$$

Round 6

Question 1



In rectangle ABCD, what is the total area of the shaded region?

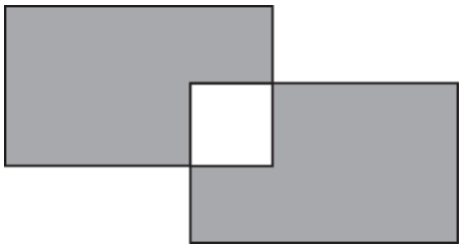
Question 2

Lucy has more than 100 barbie dolls. When she counts them in groups of two, three or five, there is always one left over. What is the smallest number of barbie dolls Lucy owns?

Round 7

Question 1

In the diagram, two 8 by 10 rectangles overlap to form a 4 by 4 square.



What is the total area of the shaded region?

Question 2

What is the smallest positive integer n for which $\sqrt[3]{2026 - n}$ is an integer?

Question 3

Fred lists the four-digit positive integers that can be made using the digits 2, 4, 5, and 9, each once. Fred lists these integers in increasing order. What is the 13th number in his list?

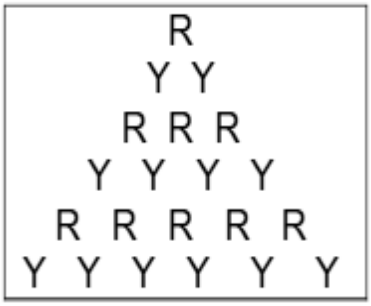
Question 4

The manufacturers of a certain pen claim that it can cover an area of 2.7 square metres before it runs dry. If the line the pen draws is 0.3 millimetres wide, how long in kilometres is the line it could draw before it runs dry?

Round 8

Question 1

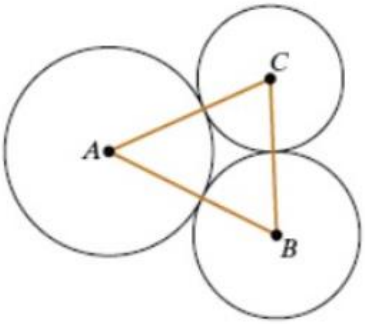
Marsha plants red and yellow roses in alternating rows as shown. Marsha continues planting until she has 15 rows of each colour, alternating red and yellow roses. How many yellow roses did she plant in total?



Question 2

In the diagram below, the centers of the circles are at the vertices of triangle ABC.

Given |AB| = 14cm, |AC| = 12cm and |BC| = 10cm, what is the radius of the smallest circle?



Question 3

The line ***l*** passes through the points (-4, 8) and (*k, k)* for some real number *k.* The line *l* is perpendicular to the line passing through the points (11, -7) and (15, 5).

What is the value of *k*?

Question 4

The integers x, y and z satisfy the following;

$$\frac{x}{5} = \frac{6}{y} = \frac{z}{2}.$$

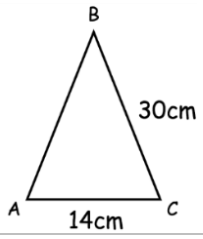
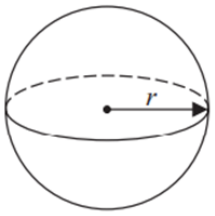
What is the largest possible value of

$$x + y + z?$$

Answers

Round 1	
1	€11376
2	$64\,\pi$
Round 2	
1	141
2	$x = 3\ and\ \ 4$
Round 3	
1	$5\%\ (\%\ not\ required$
2	$\frac{12}{90} = \frac{2}{15}\ (accept\ either)$
Round 4	
1	$z = 84°$
2	$58cm\ (cm\ not\ required)$
Round 5	
1	$\frac{15}{36} = \frac{5}{12} = 0.416666666$ Must indicate recurring decimal for solution
2	8
Round 6	
1	$35cm^2\ (units\ required)$
2	121
Round 7	
1	$128units^2\ (units\ required\ for\ area)$
2	298
3	$T_{13} = 5249$
4	$9km\ (km\ not\ required)$
Round 8	
1	240
2	$x = 4cm\ (cm\ not\ required)$
3	$k = 5$
4	43

Tie Break 1

1	Find the ***nth*** term of the following sequence 26, 39, 54, 71, 90, 111…
2	A lazy postman delivered three letters addressed to Smith, Jones and Black. If the letters were placed randomly, (one in each letterbox) what is the probability that Smith, Jones and Black receive their correct mail.
3	The line with equation $y = 5x + a$ passes through the point (a, a^2). If $a \neq 0$,what is the value of a ?
4	At 9:00 am, 51240 tickets for a Solver Concert at Suncorp Stadium go on sale. The Box Office sells 60 tickets every minute and on-line tickets are sold at the rate of 9000 per hour. At what time is the concert sold out?
5	 Triangle *ABC* is an isosceles triangle. Find the measure of $\angle ABC$ in degrees to 2 decimal places.
6	What is the next digit in the decimal expansion below? 0.1248163264128256__
7	Ada is younger than Darwyn. Max is younger than Greta. James is older than Darwyn. Max and James are the same age. Which of the five people is the oldest?
8	When Reg sold his trailer to Bob, he made a profit of 30% on his original cost price. When Bob later sold it to Merv, he also made 30% profit on his outlay. By what percentage had the value of the trailer increased overall?
9	The product of two prime numbers is an even number between 50 and 60. Calculate the sum of the two prime numbers.
10	 $\frac{3}{8}$ of the surface area of this sphere is $75\pi cm^2$. Find the diameter of the sphere. Give your answer in surd form.

Answers to Tie Break 1

	Answers
1	$Tn = n^2 + 10n + 15$
2	$\frac{1}{6} = 0.1666 = 0.167 = 17\% = 16.7\% = 16.67\%$
3	$a = 6$
4	$13{:}04\ or\ 1{:}04pm$ $pm\ required\ for\ 2nd\ answer$
5	$26.99°$
6	5
7	Greta
8	69%
9	31
10	$10\sqrt{2}\ cm$ *(units not required)*

Tie Break 2

1	The integers 390 and 9450 have three common positive divisors that are prime numbers. What is the sum of these prime numbers?
2	A soccer analyst recorded the number of goals scored by players in a league over the season. The data is grouped in intervals as shown below. The mean number of goals scored by a player is 6.5. Find the missing frequency ***x.***

Goals scored	0 - 2	3 - 5	6 - 8	9 - 11	12 - 14
Frequency	3	5	***x***	4	2

3	What does the following sum equal? *2019 – 2018 + 2017 – 2016 + 2015 – 2014 + ……+3 – 2 + 1*
4	M is the midpoint of the line AB. The coordinates of the point M are $(7,\ 2)$, the coordinates of the point B are $(11,\ 8)$, the coordinates of the point C are $(7,\ -4)$ Find the area of triangle ACM.
5	Find the sum of all the integers that lie between $\sqrt{11}\ and\ \sqrt{423}$
6	$(x+3)$ is a factor of $x^3+3x^2-49x-147$. Find the other 2 factors of this cubic function.
7	How many square units are in the triangle bounded by the line with the equation $2x+4y=16$ and the *x* and the *y* axis?
8	Write c in terms of $a\ and\ b$. $$\frac{5}{a}+\frac{b}{2}-\frac{7}{c}=0$$
9	Sarah can buy 4 roses for €5 and sell them at a price of 3 for €5. How many roses should she buy to make a profit of €1000?
10	€5200 is invested at 2.8% compound interest per annum. Work out how many years will it take for the investment to exceed €7000?

π Quiz Regional Round– March 24th, 2026

Answers to Tie Break 2

	Answers
1	10
2	$x = 4$
3	1010
4	$12\ units^2$ $(units^2\ required\ for\ area)$
5	204
6	$(x-7)(x+7)\ both\ required$
7	$16\ units^2$ $(units^2 required\ for\ area)$
8	$c = \frac{14a}{10+ab}$
9	$2400\ roses$
10	11