Round 1

Question 1

During a sale the price of all garden furniture is reduced by 20%.

The sale price of an item is €1880.

Calculate the selling price of the item before the sale.

Question 2

A, B & *C* are three sets.

$$\#(A \cap B \cap C) = 3x$$

$$\#(A \cap C) = 4x$$

$$\#(A \cap B \backslash C) = y$$

$$\#(B \cap C) = 16$$

$$\#(C \backslash (A \cup B)) = 2y$$

$$\#(B \backslash (A \cup C)) = 11.$$

Given that $\#B = 32$ and $\#C = 29$,

calculate the value of x **AND** the value of y.

Round 2

Question 1

Express 768 g as a fraction of 1·024 kg and write your answer in its simplest form.

Question 2

A sum of money is divided between two sisters, Jane and Sarah, in the ratio 9 : 7.

If Jane receives €135, calculate the sum of money.

Round 3

Question 1

Solve the equation $3(x-2)^2 - 7 = 9(1-x)$,

giving **BOTH** answers correct to one decimal place.

Question 2

In a school library, 28% of the books are classified as fiction and the remainder as non-fiction.

There are 3240 non-fiction books in the library.

Find the number of books which are classified as fiction.

Round 4

Question 1

Express in its simplest form $\frac{-2}{2x-1} + \frac{1}{x-2}$

Question 2

A supermarket has a special offer on three different brands of packets of soap. The following table gives details of the offer:

Brand	No of bars per packet	Weight of each bar	Price of packet
A	3	$100\ g$	€1.35
B	6	$100\ g$	€2.40
C	4	$125\ g$	€2.38

When the price of soap per 100 grams is calculated, what is the exact difference between the lowest and highest prices, in cent?

Round 5

Question 1

A man travels from Arklow to Blanchardstown, a distance of 90 km. He leaves Arklow at 09:25 and arrives in Blanchardstown at 10:55.

He continues from Blanchardstown to Cootehill, a distance of 112 km.

He increases his average speed by 4 km/h for this section of his journey.

At what time does he arrive in Cootehill?

Question 2

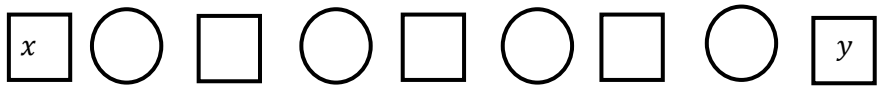
Eight workers can build a cabin in 60 hours.

How many workers are needed if the cabin is to be built in 32 hours?

Round 6

Question 1

The integers $1, 2, 4, 5, 6, 9, 10, 11, 13$ are to be placed in the circles and squares below with one number in each shape.



Each integer must be used exactly once and the integer in each circle must be equal to the sum of the integers in the two neighbouring squares. If the integer x is placed in the leftmost squae and the integer y is placed in the rightmost square, what is the **largest possible** value of $x + y$?

Question 2

Given that $x = 2t - 1$ and $y = \frac{2}{3}t + 2$, express $3x - y + 2$ in terms of t, in its simplest form.

Write your answer in the form $\frac{at-b}{3}$, $a, b \in N$

Round 7

Question 1

The average of a, b and c is 16. The average of c, d and e is 26. The average of a, b, c, d, and e is 20. Calculate the value of c.

Question 2

John and Betty each choose a positive integer that is greater than 1. Betty increases her number by 1. John then takes this new number and multiplies it by his number. This product is equal to 260. If Betty's number is larger than John's number, determine the largest possible integer Betty could have selected.

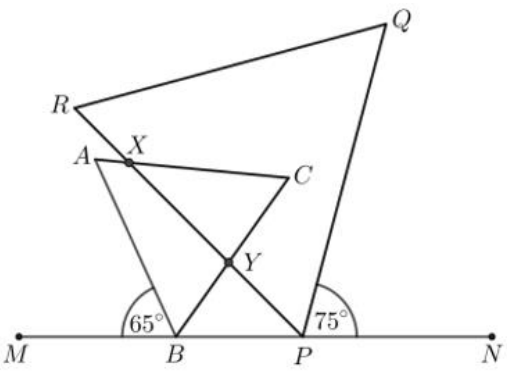
Question 3

Owen, Gabriel, and Ariane work as strawberry pickers at a local farm. One week Owen picked 135 more strawberries than Gabriel, and Ariane picked 110 more strawberries than Owen. In total that week Owen, Gabriel, and Ariane picked 2000 strawberries. Determine the number of strawberries that each person picked.

Question 4

ΔABC and ΔPQR are equilateral triangles with vertices B and P on line segment $[MN]$. The triangles intersect at two points, X and Y, as shown.

If $\angle NPQ = 75°$ and $\angle MBA = 65°$, calculate the measure of $\angle CXY$.



Round 8

Question 1

If the numbers 1, 2, 3 and 4 are substituted exactly once into the expression p^q+r^s, in some order for p,q,r, and s, what is the largest possible value of p^q+r^s?

Question 2

What is the value of

$490 - 491 + 492 - 493 + 494 - 495 + \cdots - 509 + 510$?

Question 3

The sum of the ages of three friends is 45. The second friend is twice as old as the first, and the third friend is 5 years older than the first. What are their ages?

Question 4

A sum of money was invested at compound interest for two years. The interest rate for each year was 5%. After the two years the sum amounted to €6063.75

Calculate the original sum of money invested.

π Quiz 2024 – March 14th (International π Day)

Answers

Round 1	
1	€2350
2	$x = 3$ and $y = 5$
Round 2	
1	$\frac{3}{4}$
2	€240
Round 3	
1	$1.8 \ \& \ -0.8$
2	1260
Round 4	
1	$\frac{3}{(2x-1)(x-2)}$ OR $\frac{3}{2x^2-5x+2}$
2	$7.6 \ cent$
Round 5	
1	12:40
2	15
Round 6	
1	20
2	$\frac{16t-9}{3}$
Round 7	
1	26
2	129
3	Gabriel = 540, Owen = 675 and Ariane = 785.
4	$40°$
Round 8	
1	83
2	500
3	10, 20 & 15
4	€5500

π Quiz 2024 – March 14th (International π Day)

Tie Break

1	The cost of a meal for 3 adults and 2 children amounts to €125. The cost of a meal for 2 adults and 3 children amounts to €115. Find the cost of an adult meal.
2	Solve the equation $x^2 - 4x - 8 = 0$, writing your answers in the form $a \pm a\sqrt{b}$, where $a, b \in N$.
3	Factorise $9x^2 - 16y^2$
4	The length of one side of a rectangle is $(x + 4)$. The area of the rectangle is $x^2 + 16x + 48$. Find an expression in x for the length of the other side.
5	Mr Chips has a bin full of bingo chips. The ratio of the number of red chips to the number of blue chips is $1:4$, and the ratio of the number of blue chips to the number of green chips is $5:2$. What is the ratio of the number of red chips to the number of green chips?
6	The perimeter of a square lawn is $96\ m$. Find the area of the lawn in m^2
7	Calculate the curved surface area of a cylinder, with a diameter of $75\ cm$ and a width of $1m$. Answer correct to 1 decimal place.
8	$P(-1,2)$ and $R(3,4)$ are two points. Find the equation of a line through these two points, in the form $ax + by + c = 0$.
9	If two angles in a cyclic quadrilateral are $73°$ and $84°$, find the other two angles.
10	If $\tan A = \frac{3}{4}$, find $\sin A$ in the fraction form.

Answers to Tie Break

1	€29
2	$2 \pm 2\sqrt{3}$
3	$(3x + 4y)(3x - 4y)$
4	$(x + 12)$
5	$5:8$
6	$576\ m^2$
7	$2.4\ m^2$
8	$x - 2y + 5 = 0$
9	$107°$ and $96°$
10	$\frac{3}{5}$