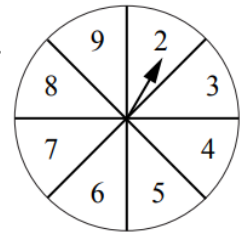


Question 1:

A circular spinner is divided into 8 equal sections, as shown. An arrow is attached to the centre of the spinner. The arrow is spun once. The probability that the arrow stops on a section containing a prime number that is odd is



- A. $\frac{1}{8}$ B. $\frac{2}{8}$ C. $\frac{3}{8}$ D. $\frac{4}{8}$ E. $\frac{7}{8}$
-

Question 2:

A positive integer whose digits are the same when read forwards or backwards is called a *palindrome*. For example, 474 and 222 are palindromes. How many palindromes are there between 100 and 1000?

- A. 10 B. 90 C. 100 D. 900 E. 1000
-

Question 3:

A rectangle has length x and width y . A triangle has base 16 and height x . If the area of the rectangle is equal to the area of the triangle, then the value of y is

- A. 16 B. 4 C. 8 D. 12 E. 32
-

Question 4:

The positive integer n has exactly 8 positive divisors including 1 and n . Two of these divisors are 14 and 21. What is the sum of all 8 positive divisors of n ?

- A. 35 B. 47 C. 53 D. 96 E. 103
-

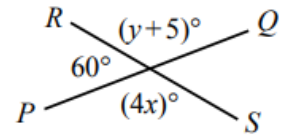
Question 5:

Two of the side lengths in an isosceles triangle are 6cm and 8cm. The perimeter of the triangle, measured in cm, could be

- A. 18 B. 14 C. 22 D. 16 E. 24
-

Question 6:

Line segments PQ and RS intersect as shown.
What is the value of $x + y$?



- A. 145 B. 70 C. 130 D. 85 E. 240
-

Question 7:

The mean, the median and the mode of the five numbers 12, 9, 11, 16, x are all equal.
What is the value of x ?

- A. 9 B. 11 C. 12 D. 13 E. 16
-

Question 8:

A Clark brand light bulb will work for 24 999 hours. If it is used for exactly 2 hours every day starting on a Monday, on what day of the week will it stop working?

- A. Thursday B. Friday C. Saturday D. Sunday E. Monday
-

Question 9:

Each of w , x , y , and z is an integer. If $w + x = 45$, $x + y = 51$, and $y + z = 28$, what is the value of $w + z$?

- A. 28 B. 22 C. 17 D. 23 E. 15
-

Question 10:

Lynley owns more cats than David and more dogs than Ian. Dave owns more dogs than Lynley and fewer cats than Ian. Which of the statements must be true?

- A. Ian owns the fewest cats
B. Ian owns the most cats
C. Lynley owns the most cats
D. Dave owns the most dogs
E. Lynley owns the fewest dogs
-

Question 11:

A line segment joins the points $P(-4, 1)$ and $Q(1, -11)$. What is the length of PQ ?

- A. 13 B. 12 C. 12.5 D. 13.6 E. 12.6
-

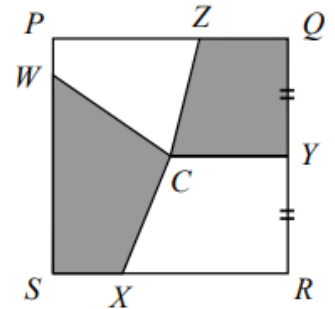
Question 12:

$PQRS$ is a square with side length 60 and centre C . Point W lies on PS so that $WS = 53$. Point X lies on SR so that $XR = 40$.

The midpoint of QR is Y . Point Z lies on PQ .

What is the length of ZQ so that the total area of the shaded regions is equal to the total area of the non-shaded regions?

- A. 21 B. 15 C. 23 D. 19 E. 17



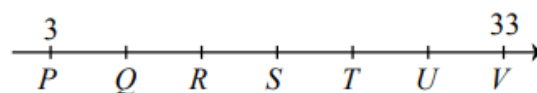
Question 13:

In Jane's netball league, each team plays exactly six games against six different teams in the league. If a total of 396 games are played, how many teams are in the league?

- A. 12 B. 16 C. 15 D. 13 E. 9
-

Question 14:

In the diagram, point P is on the number line at 3 and V is at 33. The number line between 3 and 33 is divided into six equal parts by the points Q, R, S, T, U .



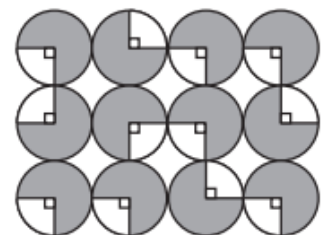
What is the sum of the lengths of PS and TV ?

- A. 25 B. 23 C. 24 D. 21 E. 27
-

Question 15:

In the diagram, each partially shaded circle has a radius of 1 cm and has a right angle marked at its centre. In cm^2 , what is the total shaded area?

- A. $4\pi^2$ B. $9\pi^2$ C. 4π D. 9π E. 3π



Question 16:

In a magic square, the numbers in each row, the numbers in each column, and the numbers on each diagonal have the same sum.

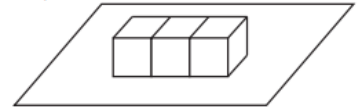
In the magic square shown, the value of x is

2.3		
3.6	3	2.4
	x	

- A. 3.8 B. 3.6 C. 3.1 D. 2.9 E. 2.2
-

Question 17:

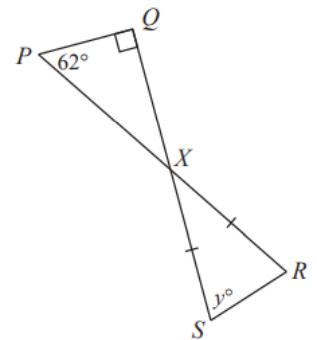
Three $1 \times 1 \times 1$ cubes are joined face to face in a single row and placed on a table, as shown. The cubes have a total of 11 exposed 1×1 faces. If sixty $1 \times 1 \times 1$ cubes are joined face to face in a single row and placed on a table, how many 1×1 faces are exposed?



- A. 125 B. 220 C. 182 D. 239 E. 200
-

Question 18:

In the diagram, PR and QS meet at X . Also, $\triangle PQX$ is right-angled at Q with $\angle QPX = 62^\circ$ and $\triangle RXS$ is isosceles with $RX = SX$ and $\angle XSR = y^\circ$. The value of y is



- A. 54 B. 71 C. 60 D. 59 E. 76
-

Question 19:

Many of the students in Mr Clark's class brought a skateboard or a bicycle to school yesterday. The ratio of the number of skateboards to the number of bicycles was 7 : 4. There were 12 more skateboards than bicycles. How many skateboards and bicycles were there in total?

- A. 44 B. 33 C. 11 D. 22 E. 55
-

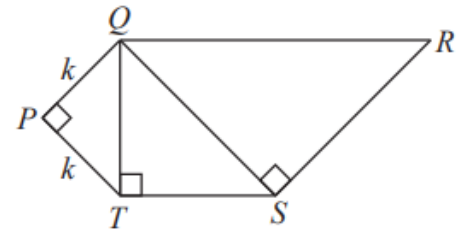
Question 20:

Grace has completed three tests. Her marks were 73%, 82% and 85%. She still has two tests left to complete. All tests are equally weighted. Her goal is an average of 80% or higher. With which of the following pairs of marks on the remaining tests will Grace not reach her goal?

- A. 79% and 82% B. 70% and 91% C. 76% and 86%
D. 73% and 83% E. 61% and 99%
-

Question 21:

In the diagram, each of $\triangle QPT$, $\triangle QTS$ and $\triangle QSR$ is an isosceles, right-angled triangle, with $\angle QPT = \angle QTS = \angle QSR = 90^\circ$. The combined area of the three triangles is 56. If $QP = PT = k$, what is the value of k ?



- A. $\sqrt{2}$ B. 4 C. 2 D. 1 E. $2\sqrt{2}$
-

Question 22:

There are six identical red balls and three identical green balls in a bag. Four of these balls are selected at random and then these four balls are arranged in a line in some order. How many different-looking arrangements are possible?

- A. 15 B. 16 C. 10 D. 11 E. 12
-

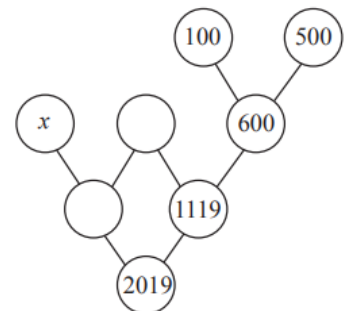
Question 23:

If $pq \times qr \times rp = 16$, then a possible value for pqr is

- A. 0 B. 2 C. 8 D. 16 E. -4
-

Question 24:

In the diagram, numbers are to be placed in the circles so that each circle that is connected to two circles above it will contain the sum of the numbers contained in the two circles above it. What is the value of x ?

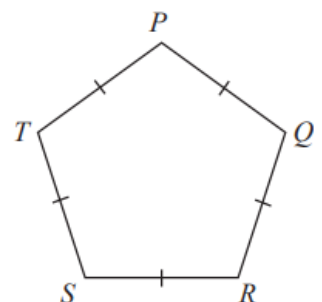


- A. 481 B. 381 C. 281 D. 581 E. 681
-

Question 25:

If $PQRST$ is a regular pentagon, then the size of angle $\angle PRS$ is

- A. 72° B. 54° C. 60° D. 45° E. 80°



Question 26:

In the addition problem shown, m , n , p , and q represent positive digits. When the problem is completed correctly, the value of $m + n + p + q$ is

$$\begin{array}{r} n63 \\ 7p2 \\ + 58q \\ \hline m042 \end{array}$$

- A. 23 B. 24 C. 21 D. 22 E. 20
-

Question 27:

The letters A , B , C , D , and E are to be placed in the grid so that each of these letters appears exactly once in each row and exactly once in each column. Which letter will go in the square marked with $*$?

A				E
		C	A	
E		B	C	
	*			
B			D	

- A. A B. B C. C D. D E. E
-

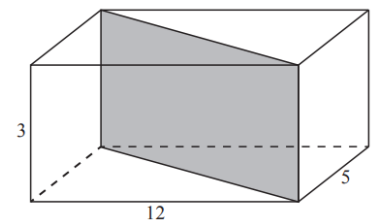
Question 28:

Kirin is standing in a cafeteria line. In the line, the number of people that are ahead of her is equal to two times the number of people that are behind her. There are n people in the line. A possible value of n is

- A. 23 B. 20 C. 24 D. 21 E. 25
-

Question 29:

A solid wooden rectangular prism measures $3 \times 5 \times 12$. The prism is cut in half by a vertical cut through four vertices, as shown. This cut creates two congruent triangular-based prisms. When these prisms are pulled apart, what is the surface area of one of these triangular-based prisms?



- A. 135 B. 111 C. 114 D. 150 E. 90
-

Question 30:

Ian and Paul are running a race. Ian runs at a constant speed of x m/s. Paul runs at a constant speed of y m/s. Ian starts running, and then Paul starts running 20 seconds later. After Paul has been running for 10 seconds, he catches up to Ian. The ratio $y : x$ is equivalent to

- A. 20 : 1 B. 2 : 1 C. 1 : 3 D. 3 : 1 E. 1 : 2
-