Questions – Junior Division

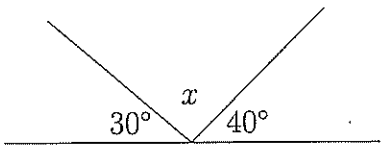
2015

1. $2015 + 201.5$ equals

   (A) 2036.5 (B) 2116.5 (C) 2225.5 (D) 2216.5 (E) 2115.5

2. The value of x in the diagram is

   (A) 100° (B) 130° (C) 110° (D) 120° (E) 90°



3. The trip to school takes 23 minutes. I need to be at school at 9:05 am. The latest I can leave home is

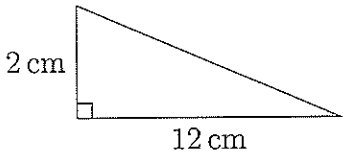
   (A) 8:46 am (B) 8:37 am (C) 8:52 am (D) 8:42 am (E) 8:48 am

4. What is the value of 100 twenty-cent coins?

   (A) \$20 (B) \$10 (C) \$200 (D) \$2´ (E) \$100

5. What is the area of this triangle in square centimetres?

   (A) 10 (B) 12 (C) 14 (D) 7 (E) 6



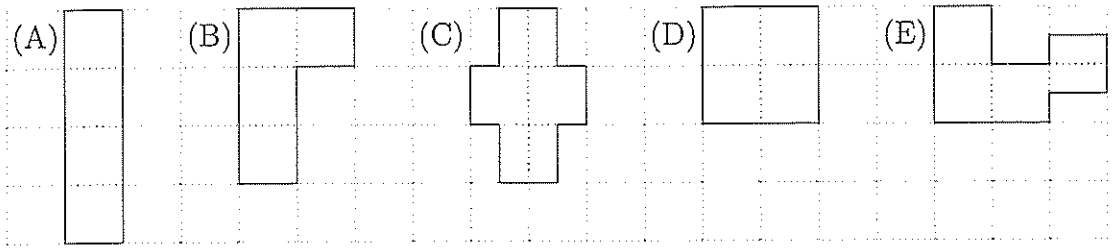
6. When the bell rang, there were 3 teachers and 6 students in the classroom. Several students arrived after the bell. Once everyone had arrived, there were 4 students for every teacher. How many students arrived after the bell?

   (A) 18 (B) 12 (C) 6 (D) 3 (E) 9

7. A movie lasts for $2\frac{1}{3}$ hours. The movie is shown in two equal sessions. For how many minutes does each session last?

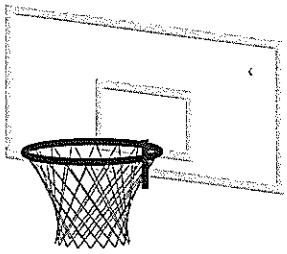
   (A) 85 (B) 70 (C) 80 (D) 65 (E) 75

8. Four unit squares are laid out in five different arrangements as shown below. Which one has the largest perimeter?



9. Ari, Bryce, Cy and Eric are members of our school's basketball team. Ari is 186 cm tall. He is 14 cm taller than Bryce who in turn is 6 cm shorter than Cy. Eric is 11 cm taller than Cy.

Eric's height is

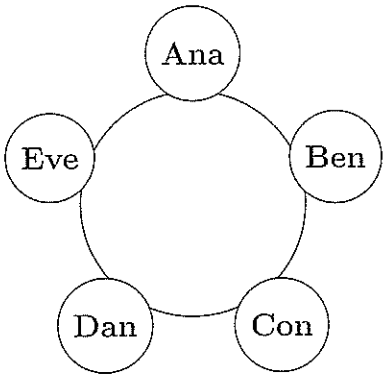


(A) 183 cm (B) 205 cm (C) 178 cm
(D) 189 cm (E) 177 cm

10. Ana, Ben, Con, Dan and Eve are sitting around a table in that order. Ana calls out the number 1, then Ben calls out the number 2, then Con calls out the number 3, and so on. After a person calls out a number, the next person around the table calls out the next number.

Anyone who calls out a multiple of 7 must immediately leave the table.

Who is the last person remaining at the table?



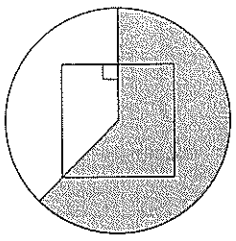
(A) Ana (B) Ben (C) Con
(D) Dan (E) Eve

11. $\frac{5}{19}$ of 38 is equal to

(A) 76 (B) 19 (C) $\frac{2}{5}$ (D) $2\frac{1}{2}$ (E) 10

12. The diagram shows a circle and a square with the same centre.

What fraction of the circle is shaded?



(A) $\frac{5}{8}$ (B) $\frac{4}{7}$ (C) $\frac{3}{5}$ (D) $\frac{6}{11}$ (E) $\frac{2}{3}$

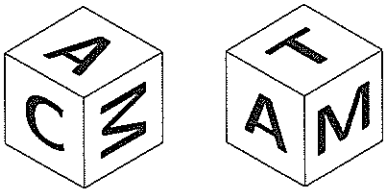
13. In the addition below x, y and z represent three different digits.

$$\begin{array}{cccc} & 4 & x & \\ & x & 4 & + \\ \hline z & y & z & \end{array}$$

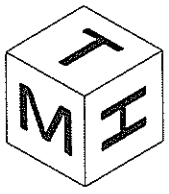
What is the value of $x + y + z$?

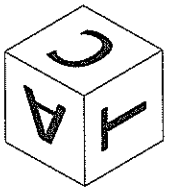
(A) 9 (B) 8 (C) 10 (D) 7 (E) 6

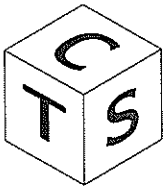
14. A cube has the letters A, C, M, T, H and S on its six faces. Here are two views of this cube.

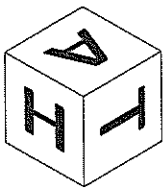


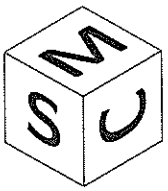
Which one of the following could be a third view of the same cube?

(A) 

(B) 

(C) 

(D) 

(E) 

15. Five students are to be photographed in a row with the tallest in the centre and the shortest two at the ends. If no two students are the same height, how many different arrangements are possible?

(A) 6 (B) 2 (C) 10 (D) 5 (E) 4

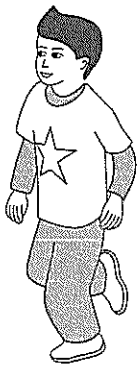
16. Three boys and three girls all celebrate their birthday today, but they are each different ages. The youngest is 1 year old. The sum of the ages of the three girls is the same as the sum of the ages of the three boys. What is the smallest possible total of all six ages?

(A) 22 (B) 24 (C) 28 (D) 21 (E) 26

17. Jenna measures three sides of a rectangle and gets a total of 80 cm. Dylan measures three sides of the same rectangle and gets a total of 88 cm. What is the perimeter of the rectangle?

(A) 112 cm (B) 132 cm (C) 96 cm (D) 168 cm (E) 156 cm

18. Jim is running five laps of the school oval. When he is $\frac{3}{4}$ of the way round his fourth lap, what fraction of his run has he completed?

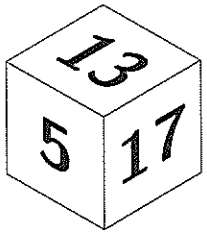


(A) $\frac{2}{3}$ (B) $\frac{1}{2}$ (C) $\frac{3}{4}$ (D) $\frac{4}{5}$ (E) $\frac{5}{6}$

19. How many two-digit numbers have the property that the sum of the digits is a perfect square?

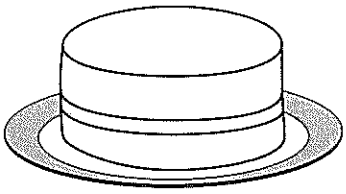
(A) 15 (B) 18 (C) 13 (D) 19 (E) 17

20. On this cube, opposite faces add to the same sum and all faces are prime numbers. (Note that 1 is not prime.) What is the smallest possible total of the faces which cannot be seen?



(A) 41 (B) 35 (C) 45 (D) 47 (E) 37

21. A recipe requires 2 kg sugar, 4 kg butter, and 6 kg flour to make 8 cakes. How many cakes can you make if you have 9 kg sugar, 17 kg butter and 28 kg flour?



(A) 40 (B) 34 (C) 37 (D) 32 (E) 36

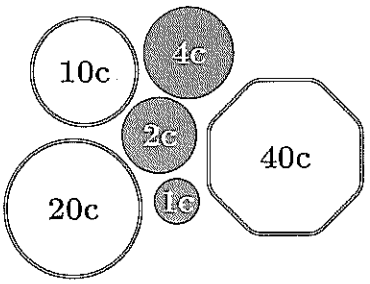
22. Two ordinary dice are rolled. The two resulting numbers are multiplied together to create a score. The probability of rolling a score that is a multiple of six is

(A) $\frac{1}{6}$ (B) $\frac{5}{12}$ (C) $\frac{1}{4}$ (D) $\frac{1}{3}$ (E) $\frac{1}{2}$

23. Jill and Jack are exercising at a beach. They both start from the car park at one end of the beach. Jill runs at a constant speed and Jack walks at a constant speed. When Jill turns at the end of the beach to run back, she notices that Jack is then halfway along the beach. How far along the beach will Jack be when Jill next passes him?

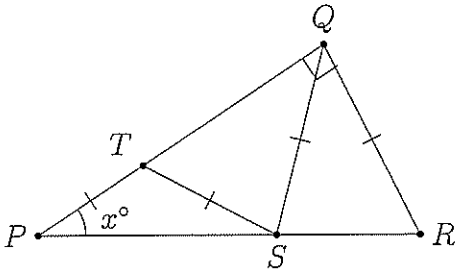
(A) Two-thirds of the way
(B) Five-sixths of the way
(C) Three-quarters of the way
(D) Five-eighths of the way
(E) Seven-eighths of the way

24. The country of Numismatica has six coins of the following denominations: 1 cent, 2 cents, 4 cents, 10 cents, 20 cents and 40 cents.
Using the coins in my pocket, I can pay exactly for any amount up to and including 200 cents.
What is the smallest number of coins I could have?



(A) 12 (B) 10 (C) 11 (D) 9 (E) 8

25. In the diagram, $PT = TS = SQ = QR$, $\angle PQR = 90°$ and $\angle QPR = x°$.
Then x is equal to



(A) 20 (B) 25 (C) 27.5
(D) 22.5 (E) 30

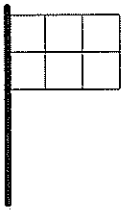
The answers to questions 26–30 are three digit numbers (000 to 999).

26. I write down three different positive whole numbers that add to 96. The sum of any two is divisible by the third.
What is the largest of these three numbers?

27. At a football match, one-third of spectators support the Reds and the rest support the Blues. At half-time 345 Blues supporters leave because their team is losing, and the remaining Blues supporters now make up one-third of the total. How many Reds supporters are there?

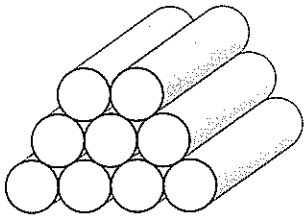
28. A 3×2 flag is divided into six squares, as shown. Each square is to be coloured green or blue, so that every square shares at least one edge with another square of the same colour.

In how many different ways can this be done?



29. Zoltan has a list of whole numbers, all larger than 0 but smaller than 1000. He notices that every number in his list is either one-third of another number in the list or three times another number in the list. What is the largest number of different whole numbers that can be on Zoltan's list?

30. In a stack of logs, each row has exactly one fewer log than the row below. With 9 logs, the tallest possible stack is shown.



With 2015 logs, how many rows are there in the tallest possible stack?