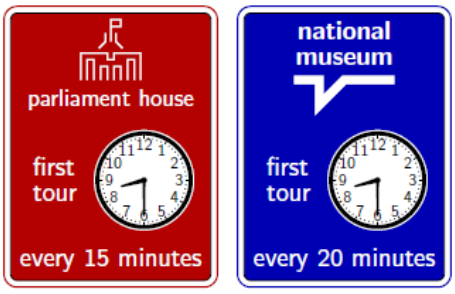
Australian AMC

Level: Middle Primary (year 3 - 4)

8. Each day, tours of Parliament House and the National Museum begin at 8.30 am. The tours for Parliament House leave every 15 minutes and the tours for the National Museum leave every 20 minutes.
How often do the tours leave at the same time?



(A) every 5 minutes (B) every 15 minutes (C) every 30 minutes
(D) every 45 minutes (E) every 60 minutes

17. At Susie's party, they have four pizzas to share and each person gets $\frac{2}{3}$ of a pizza. How many people are at the party?

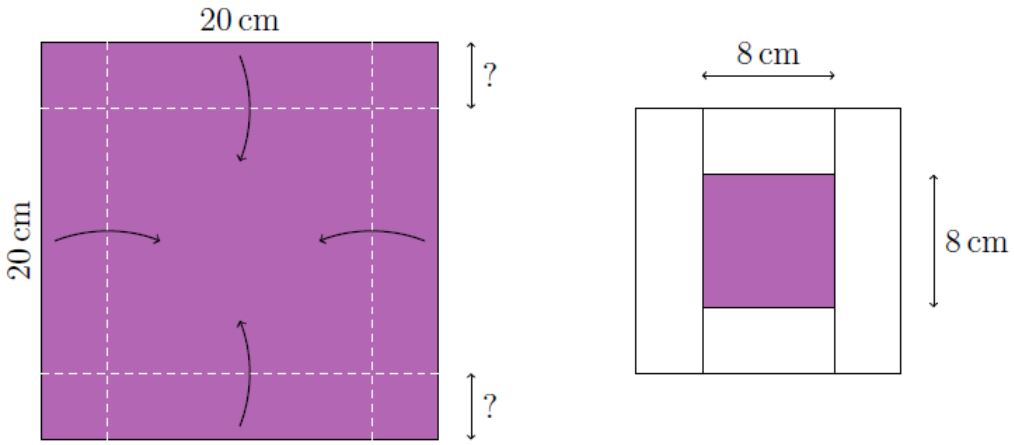
(A) 4 (B) 6 (C) 8 (D) 12 (E) 16

21. Six small eggs weigh the same as five medium eggs. Six medium eggs weigh the same as four large eggs. How many small eggs would weigh the same as five large eggs?

(A) 5 (B) 6 (C) 8 (D) 9 (E) 12

Email: info@lighthousecamps.com
Line ID: @lighthousecamps

25. Yasmin has a 20 cm × 20 cm square of paper that is coloured on one side. She folds over a strip along each edge to make a white square with an 8 cm × 8 cm coloured square inside. How far from each edge is each fold?



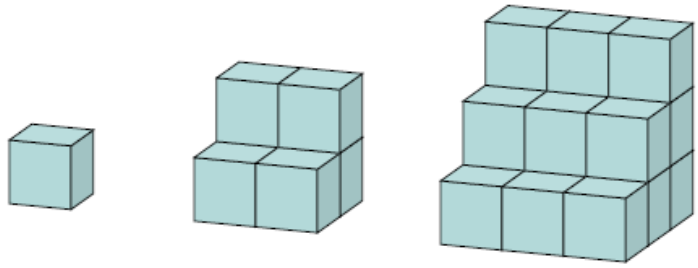
(A) 8 cm (B) 6 cm (C) 4 cm (D) 3 cm (E) 1 cm

27. A teacher wants her students to guess the three-digit number that she is thinking. She gives these clues:

- It is divisible by both 3 and 11.
- If you subtract one, the result is divisible by both 2 and 7.

Which number is it?

28. These staircases are made from layers of blocks.
Each staircase is one block wider, one block longer and one block taller than the previous staircase.
How many blocks are needed to build the 12-step staircase?



One step Two steps Three steps

Email: info@lighthousecamps.com
Line ID: @lighthousecamps

Australian AMC

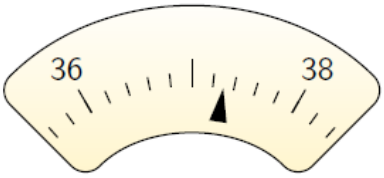
Level: Upper Primary (year 5 - 6)

6. Jane has a number of 20c coins and Tariq has a number of 50c coins. They have the same amount of money. What is the smallest number of coins they could have all together?

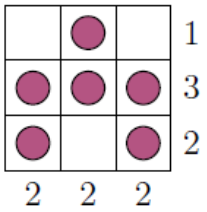
(A) 2 (B) 5 (C) 6 (D) 7 (E) 10

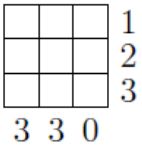
11. What value is indicated on this popularity meter?

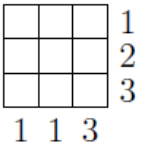
(A) 36.65 (B) 37.15 (C) 37.3 (D) 37.65 (E) 38.65

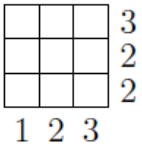


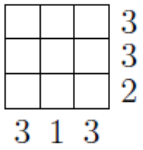
15. In this grid, each number at the end of a row or below a column indicates how many squares in that row or column contain a counter.
Which one of the following grids could also have counters with these rules?

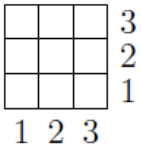


(A)


(B)


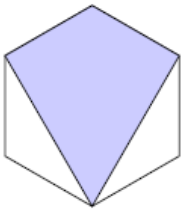
(C)


(D)


(E)


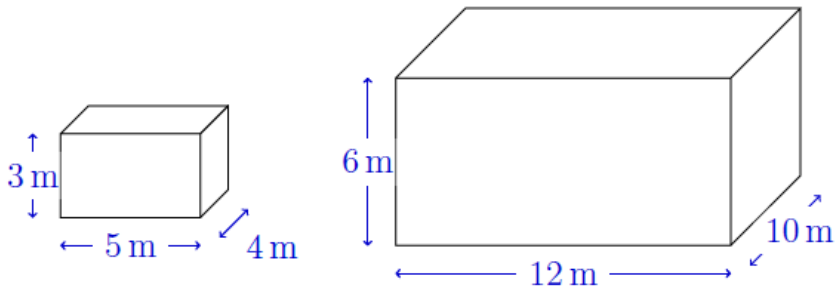
18. What fraction of this regular hexagon is shaded?

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



Email: info@lighthousecamps.com
Line ID: @lighthousecamps

23. These two water tanks are to be filled. A hose used to do this can fill the smaller tank in 2 hours. How many hours will the same hose take to fill the larger tank?



(A) 4 (B) 6 (C) 9 (D) 12 (E) 24

30. The answer to a cross-number puzzle clue is a whole number (not a word).

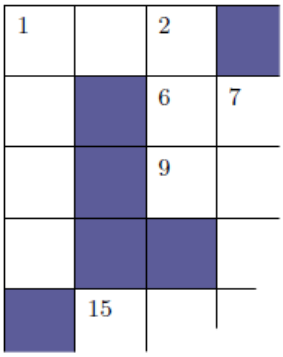
A fragment of such a puzzle is shown. Some clues are:

Across

1. Square of 27-down.
6. Half of 1-across.

Down

1. Twice 2-down.
2. A multiple of 9.



What is 2-down?

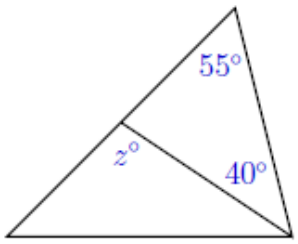
Australian AMC

Level: Junior (year 7 - 8)

8. What is the value of z?

(A) 75 (B) 85 (C) 95

(D) 100 (E) 105



16. James is choosing his language electives for next year. He has to choose two different electives, one from Group A and one from Group B.

Group A	Group B
Mandarin	Mandarin
Japanese	German
Spanish	Arabic
Indonesian	Italian

How many different pairs of elective combinations are possible?

(A) 7 (B) 8 (C) 12 (D) 15 (E) 16

18. Fill in this diagram so that each of the rows, columns and diagonals adds to 18.

What is the sum of all the corner numbers?

(A) 20 (B) 22 (C) 23

(D) 24 (E) 25

	6	
	4	

Email: info@lighthousecamps.com
Line ID: @lighthousecamps

24. In this expression

$$\square\,\frac{1}{3}\,\square\,\frac{1}{4}\,\square\,\frac{1}{5}\,\square\,\frac{1}{6}\,\square\,\frac{1}{7}$$

we place either a plus sign or a minus sign in each box so that the result is the smallest positive number possible. The result is

(A) between 0 and $\frac{1}{100}$

(B) between $\frac{1}{100}$ and $\frac{1}{50}$

(C) between $\frac{1}{50}$ and $\frac{1}{20}$

(D) between $\frac{1}{20}$ and $\frac{1}{10}$

(E) between $\frac{1}{10}$ and 1

26. Using only digits 0, 1 and 2, this cube has a different number on each face.

Numbers on each pair of opposite faces add to the same 3-digit total.

What is the largest that this total could be?

29. In the multiplication shown, X, Y and Z are different non-zero digits.

$$\begin{array}{cccc} & X & Y & Z \\ \times & & 1 & 8 \\ \hline Z & X & Y & Y \end{array}$$

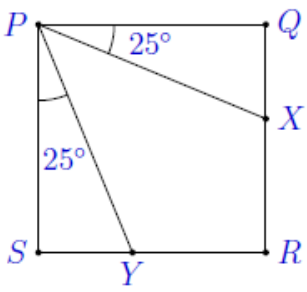
What is the three-digit number XYZ?

Australian AMC

Level: Intermediate (year 9 - 10)

4. In the diagram, $PQRS$ is a square. What is the size of $\angle XPY$?

(A) 25° (B) 30° (C) 35° (D) 40° (E) 45°



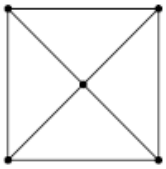
12. In a certain year there were exactly four Tuesdays and exactly four Fridays in the month of December. What day of the week was 31 December?

(A) Monday (B) Wednesday (C) Thursday (D) Friday (E) Saturday

14. The sum of 4 consecutive integers is t.
In terms of t, the smallest of the four integers is

(A) $\frac{t-10}{4}$ (B) $\frac{t-2}{4}$ (C) $\frac{t-3}{4}$ (D) $\frac{t-4}{4}$ (E) $\frac{t-6}{4}$

19. A town is laid out in a square of side 1 kilometre, with six straight roads as shown.
Each day the postman must walk the full length of every road at least once, starting wherever he likes and ending wherever he likes.
How long is the shortest route he can take, in kilometres?



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

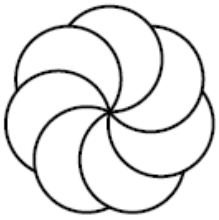
29. An infinite increasing list of numbers has the property that the median of the first n terms equals the n^{th} odd positive integer. How many numbers in the list are less than 2018?

Email: info@lighthousecamps.com
Line ID: @lighthousecamps

30. For $n \geq 3$, a pattern can be made by overlapping n circles, each of circumference 1 unit, so that each circle passes through a central point and the resulting pattern has order-n rotational symmetry.

For instance, the diagram shows the pattern where $n = 7$.

If the total length of visible arcs is 60 units, what is n?

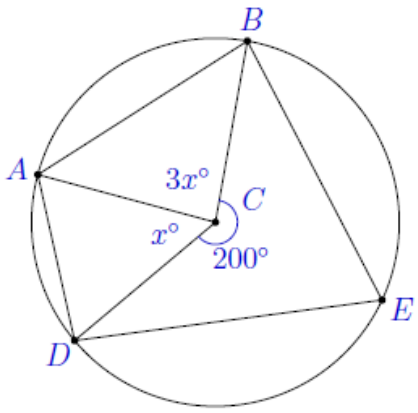


Email: info@lighthousecamps.com
Line ID: @lighthousecamps

Australian AMC

Level: Senior (years 11-12)

12. In the circle shown, C is the centre and A, B, D and E all lie on the circumference.
Reflex $\angle BCD = 200°$, $\angle DCA = x°$ and $\angle BCA = 3x°$ as shown.
The ratio of $\angle DAC : \angle BAC$ is



(A) 3 : 1 (B) 5 : 2 (C) 8 : 3 (D) 7 : 4 (E) 7 : 3

15. A netball coach is planning a train trip for players from her two netball clubs, Panthers and Warriors.
The two clubs are in different towns, so the train fares per player are different. For the same cost she can either take 6 Panthers and 7 Warriors or she can take 8 Panthers and 4 Warriors.
If she takes only members of the Warriors on the train journey, the number she could take for the same cost is

(A) 11 (B) 13 (C) 16 (D) 20 (E) 25

17. Three fair 6-sided dice are thrown. What is the probability that the three numbers rolled are three consecutive numbers, in some order?

(A) $\frac{1}{6}$ (B) $\frac{1}{9}$ (C) $\frac{1}{27}$ (D) $\frac{7}{36}$ (E) $\frac{1}{54}$

24. In the equation $\underbrace{\sqrt{\sqrt{\ldots\sqrt{256}}}}_{60} = 2^{(8^x)}$ the value of x is

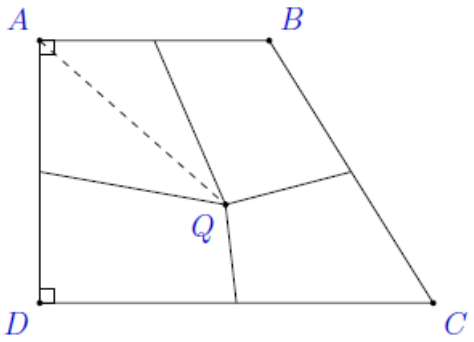
(A) -17 (B) -19 (C) -21 (D) -23 (E) 16

Email: info@lighthousecamps.com
Line ID: @lighthousecamps

27. The trapezium $ABCD$ has $AB = 100$, $BC = 130$, $CD = 150$ and $DA = 120$, with right angles at A and D.

An interior point Q is joined to the midpoints of all 4 sides. The four quadrilaterals formed have equal areas.

What is the length AQ?



28. Donald has a pair of blue shoes, a pair of red shoes, and a pair of white shoes. He wants to put these six shoes side by side in a row. However, Donald wants the left shoe of each pair to be somewhere to the left of the corresponding right shoe. How many ways are there to do this?