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## Upper Primary Division

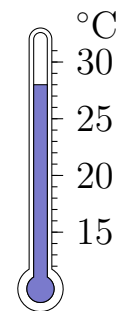
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### Questions 1 to 10, 3 marks each

1. What does the digit 1 in 2015 represent?  
(A) one (B) ten (C) one hundred (D) one thousand (E) ten thousand
- 

2. What is the value of 10 twenty-cent coins?  
(A) \$1 (B) \$2 (C) \$5 (D) \$20 (E) \$50
- 

3. What temperature does this thermometer show?  
(A) 25° (B) 38° (C) 27°  
(D) 32° (E) 28°



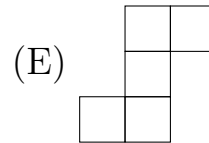
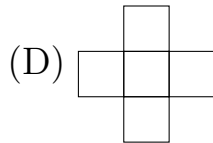
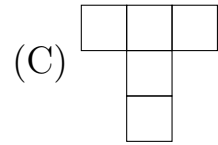
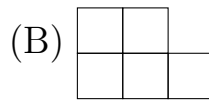
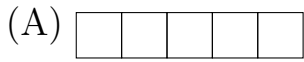
4. Which number do you need in the box to make this number sentence true?

$$19 + 45 = 20 + \square$$

- (A) 34 (B) 44 (C) 46 (D) 64 (E) 84
- 

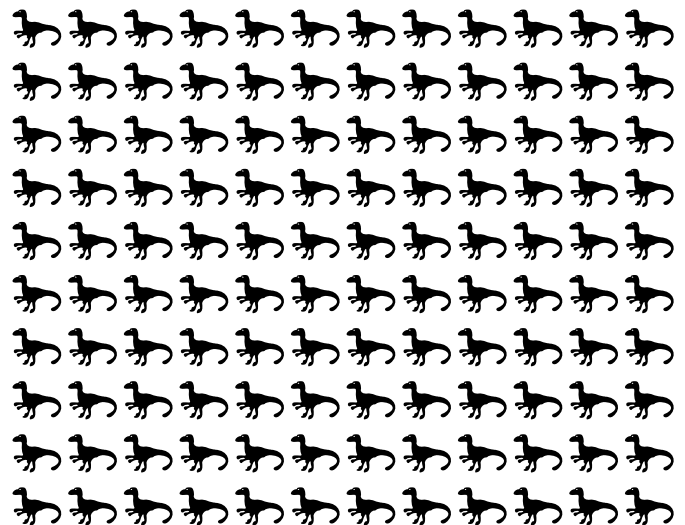
5. Which number has the greatest value?  
(A) 1.3 (B) 1.303 (C) 1.31 (D) 1.301 (E) 1.131
-

6. The perimeter of a shape is the distance around the outside. Which of these shapes has the smallest perimeter?



7. The class were shown this picture of many dinosaurs. They were asked to work out how many there were in half of the picture.

- Simon wrote  $6 \times 10$ .
- Carrie wrote  $5 \times 12$ .
- Brian wrote  $10 \times 12 \div 2$ .
- Rémy wrote  $10 \div 2 \times 12$ .

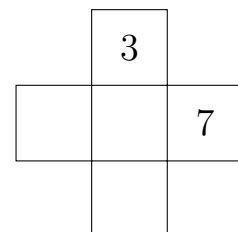


Who was correct?

- (A) All four were correct      (B) Only Simon      (C) Only Carrie  
 (D) Only Brian      (E) Only Rémy

8. In the diagram, the numbers 1, 3, 5, 7 and 9 are placed in the squares so that the sum of the numbers in the row is the same as the sum of the numbers in the column.

The numbers 3 and 7 are placed as shown. What could be the sum of the row?



- (A) 14      (B) 15      (C) 12      (D) 16      (E) 13

9. To which square should I add a counter so that no two rows have the same number of counters, and no two columns have the same number of counters?

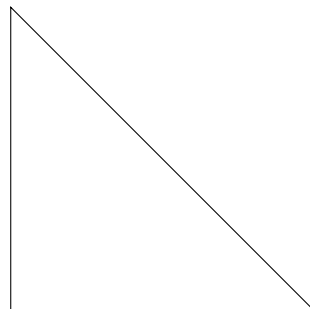
A	●	●	●
B		●	C
●		●	D
●	●	●	E

- (A) A      (B) B      (C) C      (D) D      (E) E

10. A half is one-third of a number. What is the number?
- (A) three-quarters      (B) one-sixth      (C) one and a third  
 (D) five-sixths      (E) one and a half

**Questions 11 to 20, 4 marks each**

11. The triangle shown is folded in half three times without unfolding, making another triangle each time.

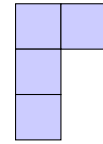


Which figure shows what the triangle looks like when unfolded?

- (A)     
 (B)     
 (C)     
 (D)     
 (E)

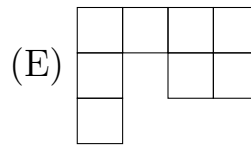
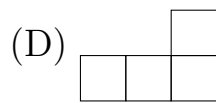
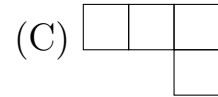
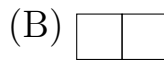
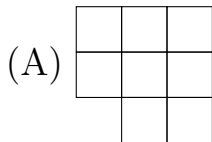
12. If  $L = 100$  and  $M = 0.1$ , which of these is largest?
- (A)  $L + M$       (B)  $L \times M$       (C)  $L \div M$       (D)  $M \div L$       (E)  $L - M$

13. You want to combine each of the shapes (A) to (E) shown below separately with the shaded shape on the right to make a rectangle.

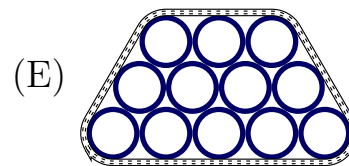
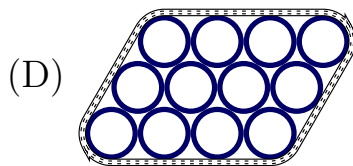
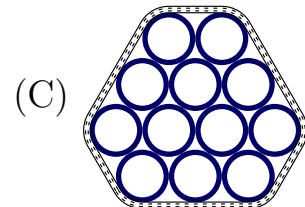
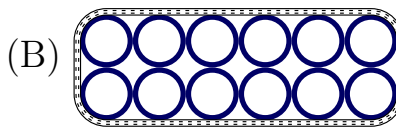
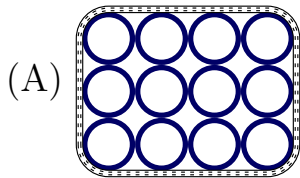


You are only allowed to turn and slide the shapes, not flip them over. The finished pieces will not overlap and will form a rectangle with no holes.

For which of the shapes is this not possible?

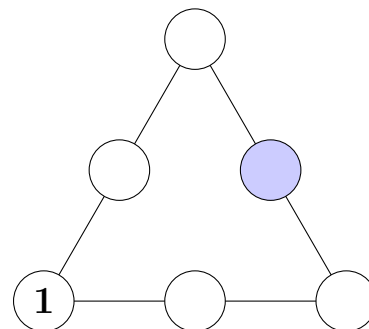


14. A plumber has 12 lengths of drain pipe to load on his ute. He knows that the pipes won't come loose if he bundles them so that the rope around them is as short as possible. How does he bundle them?

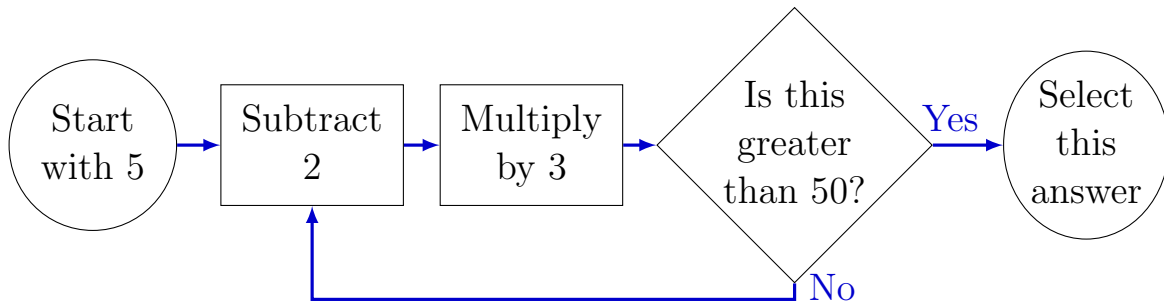


15. The numbers 1 to 6 are placed in the circles so that each side of the triangle has a sum of 10. If 1 is placed in the circle shown, which number is in the shaded circle?

- (A) 2                      (B) 3                      (C) 4  
(D) 5                      (E) 6

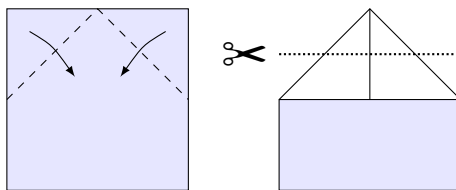


16. Follow the instructions in this flow chart.



- (A) 57                      (B) 63                      (C) 75                      (D) 81                      (E) 84

17. A square piece of paper is folded along the dashed lines shown and then the top is cut off.



The paper is then unfolded. Which shape shows the unfolded piece?

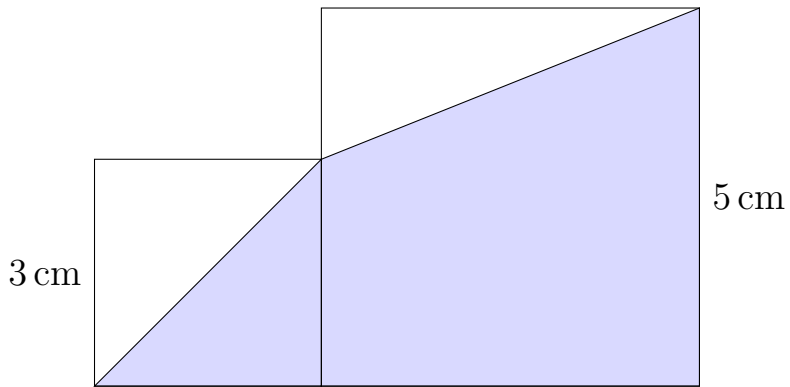
- (A) (B) (C) (D) (E)

18. Sally, Li and Raheelah have birthdays on different days in the week beginning Sunday 2 August. No two birthdays are on following days and the gap between the first and second birthday is less than the gap between the second and third. Which day is definitely not one of their birthdays?



- (A) Monday                      (B) Tuesday                      (C) Wednesday  
 (D) Thursday                      (E) Friday

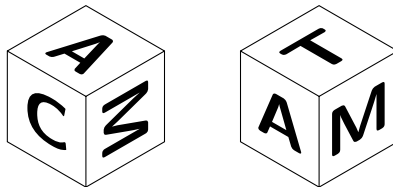
19. A square of side length 3 cm is placed alongside a square of side 5 cm.



What is the area, in square centimetres, of the shaded part?

- (A) 22.5      (B) 23      (C) 23.5      (D) 24      (E) 24.5

20. 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)

**Questions 21 to 25, 5 marks each**

- 21.** A teacher gives each of three students Asha, Betty and Cheng a card with a 'secret' number on it. Each looks at her own number but does not know the other two numbers. Then the teacher gives them this information.

All three numbers are different whole numbers and their sum is 13. The product of the numbers is odd. Betty and Cheng now know what the numbers are on the other two cards, but Asha does not have enough information. What number is on Asha's card?

- (A) 9                      (B) 7                      (C) 5                      (D) 3                      (E) 1

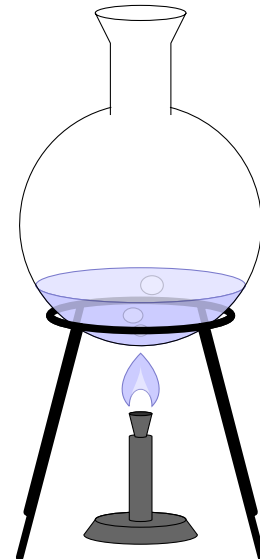
- 22.** In this multiplication,  $L$ ,  $M$  and  $N$  are different digits. What is the value of  $L + M + N$ ?

$$\begin{array}{r} \phantom{\times} \phantom{N} \phantom{M} \phantom{5} \phantom{M} \\ \phantom{\times} \phantom{N} \phantom{M} \phantom{5} \phantom{M} \\ \times \phantom{N} \phantom{M} \phantom{5} \phantom{M} \\ \hline N \phantom{M} \phantom{5} \phantom{M} \end{array}$$

- (A) 13                      (B) 15                      (C) 16  
(D) 17                      (E) 20

- 23.** A scientist was testing a piece of metal which contains copper and zinc. He found the ratio of metals was 2 parts copper to 3 parts zinc. Then he melted this metal and added 120 g of copper and 40 g of zinc into it, forming a new piece of metal which weighs 660 g. What is the ratio of copper and zinc in the new metal?

- (A) 1 part copper to 3 parts zinc  
(B) 2 parts copper to 3 parts zinc  
(C) 16 parts copper to 17 parts zinc  
(D) 8 parts copper to 17 parts zinc  
(E) 8 parts copper to 33 parts zinc





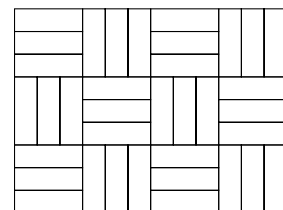
24. Jason had between 50 and 200 identical square cards. He tried to arrange them in rows of 4 but had one left over. He tried rows of 5 and then rows of 6, but each time he had one card left over. Finally, he discovered that he could arrange them to form one large solid square. How many cards were on each side of this square?
- (A) 8            (B) 9            (C) 10            (D) 11            (E) 12

25. Eve has \$400 in Australian notes in her wallet, in a mixture of 5, 10, 20 and 50 dollar notes. As a surprise, Viv opens Eve's wallet and replaces every note with the next larger note. So, each \$5 note is replaced by a \$10 note, each \$10 note is replaced by a \$20 note, each \$20 note is replaced by a \$50 note and each \$50 note is replaced by a \$100 note. Eve discovers that she now has \$900. How much of this new total is in \$50 notes?
- (A) \$50            (B) \$100            (C) \$200            (D) \$300            (E) \$500

**For questions 26 to 30, shade the answer as a whole number from 0 to 999 in the space provided on the answer sheet.**

**Question 26 is 6 marks, question 27 is 7 marks, question 28 is 8 marks, question 29 is 9 marks and question 30 is 10 marks.**

26. Alex is designing a square patio, paved by putting bricks on edge using the *basketweave* pattern shown. She has 999 bricks she can use, and designs her patio to be as large a square as possible. How many bricks does she use?



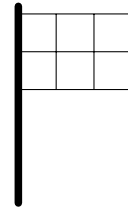
- 27.** There are many ways that you can add three different positive whole numbers to get a total of 12. For instance,  $1 + 5 + 6 = 12$  is one way but  $2 + 2 + 8 = 12$  is not, since 2, 2 and 8 are not all different.

If you multiply these three numbers, you get a number called the product.

Of all the ways to do this, what is the largest possible product?

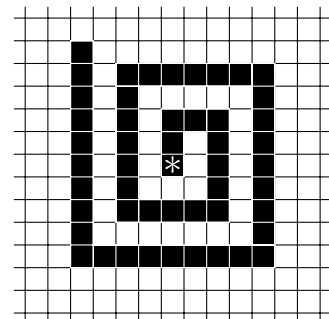
- 28.** I have 2 watches with a 12 hour cycle. One gains 2 minutes a day and the other loses 3 minutes a day. If I set them at the correct time, how many days will it be before they next together tell the correct time?

- 29.** A  $3 \times 2$  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?

- 30.** The squares in a  $25 \times 25$  grid are painted black or white in a spiral pattern, starting with black at the centre  $*$  and spiralling out.



The diagram shows how this starts.

How many squares are painted black?