

Level Benjamin (Class 5 & 6)

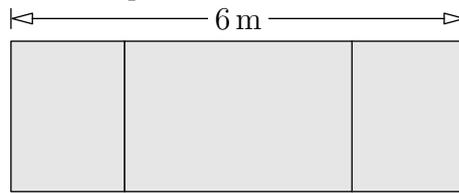
Time Allowed : 3 hours

**SECTION ONE - (3 points problems)**

1. Basil wants to paint the slogan VIVAT KANGAROO on a wall. He wants different letters to be coloured differently, and the same letters to be coloured identically. How many colours will he need?

- (A) 7                      (B) 8                      (C) 9                      (D) 10                      (E) 13

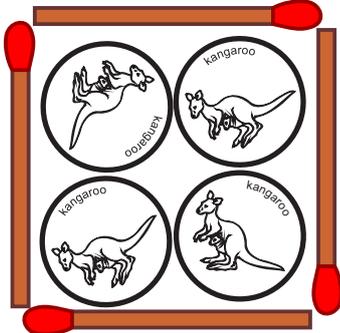
2. A blackboard is 6 m wide. The width of the middle part is 3 m. The two other parts have



equal width. How wide is the right-hand part?

- (A) 1 m                      (B) 1,25 m                      (C) 1,5 m                      (D) 1,75 m                      (E) 2 m

3. Sally can put 4 coins in a square built with 4 matches (see picture). At least how many matches will she need in order to build a square containing 16 coins that do not overlap?



- (A) 8                      (B) 10                      (C) 12                      (D) 15                      (E) 16

4. In a plane, the rows are numbered from 1 to 25, but there is no row number 13. Row number 15 has only 4 passenger seats, all the rest have 6 passenger seats. How many seats for passengers are there in the plane?

- (A) 120                      (B) 138                      (C) 142                      (D) 144                      (E) 150

5. When it is 4 o'clock in the afternoon in London, it is 5 o'clock in the afternoon in Madrid and it is 8 o'clock in the morning on the same day in San Francisco. Ann went to bed in San Francisco at 9 o'clock yesterday evening. What was the time in Madrid at that moment?

- (A) 6 o'clock yesterday morning                      (B) 6 o'clock yesterday evening

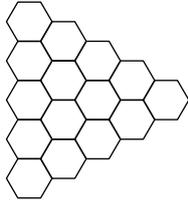
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(C) 12 o'clock yesterday afternoon

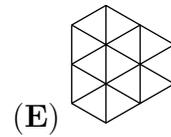
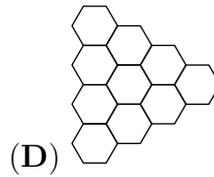
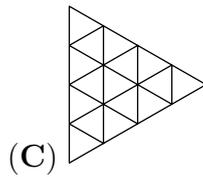
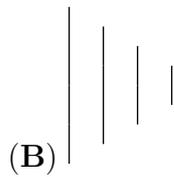
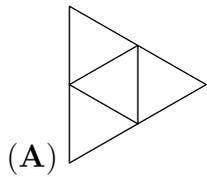
(D) 12 o'clock midnight

(E) 6 o'clock this morning

6. The picture shows a pattern of hexagons. We draw a new pattern by connecting all the midpoints of any neighbouring hexagons.



What pattern do we get?



7. To the number 6 we add 3. Then we multiply the result by 2 and then we add 1. Then the final result will be the same as the result of the computation

(A)  $(6 + 3 \cdot 2) + 1$

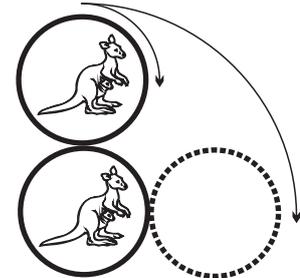
(B)  $6 + 3 \cdot 2 + 1$

(C)  $(6 + 3) \cdot (2 + 1)$

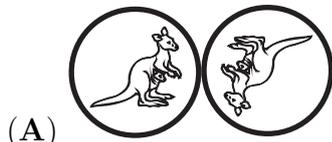
(D)  $(6 + 3) \cdot 2 + 1$

(E)  $6 + 3 \cdot (2 + 1)$

8. The upper coin is rotated without slipping around the fixed lower coin to a position shown

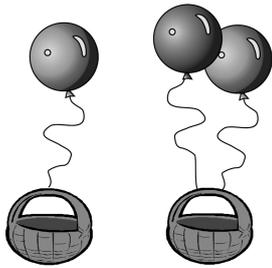


on the picture. Which is the resulting relative position of kangaroos?



(E) depends on the rotation speed

9. One balloon can lift a basket containing items weighing at most 80 kg. Two such balloons can lift the same basket containing items weighing at most 180 kg. What is the weight of the



basket? max 80 kg

max 180 kg

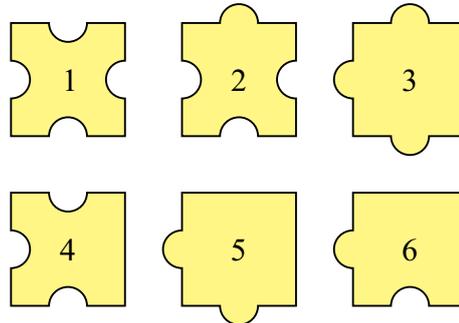
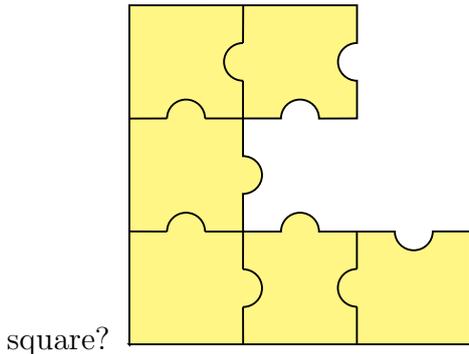
- (A) 10 kg      (B) 20 kg      (C) 30 kg      (D) 40 kg      (E) 50 kg

10. Vivien and Mike were given some apples and pears by their grandmother. They had 25 pieces of fruit in their basket altogether. On the way home Vivien ate 1 apple and 3 pears, and Mike ate 3 apples and 2 pears. At home they found out that they brought home the same number of pears as apples. How many pears were they given by their grandmother?

- (A) 12      (B) 13      (C) 16      (D) 20      (E) 21

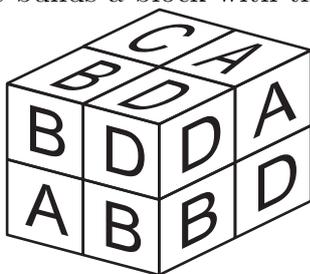
**SECTION TWO - (4 points problems)**

11. Which three of the numbered puzzle pieces should you add to the picture to complete the



- (A) 1, 3, 4      (B) 1, 3, 6      (C) 2, 3, 5      (D) 2, 3, 6      (E) 2, 5, 6

12. Lisa has 8 dice with the letters A, B, C and D, the same letter on all sides of each die. She builds a block with them.

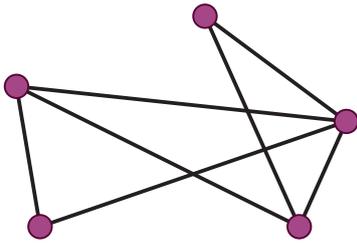


Two adjacent dice always have different letters. What letter is on the die that cannot be seen on the picture?

- (A) A      (B) B      (C) C      (D) D      (E) Impossible to say

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13. There are five cities in Wonderland. Each pair of cities is connected by one road, either visible or invisible. On the map of Wonderland, there are only seven visible roads, as shown.



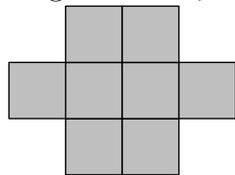
Alice has magical glasses: when she looks at the map through these glasses she only sees the roads that are otherwise invisible. How many invisible roads can she see?

- (A) 9                      (B) 8                      (C) 7                      (D) 3                      (E) 2

14. The positive integers have been coloured red, blue or green: 1 is red, 2 is blue, 3 is green, 4 is red, 5 is blue, 6 is green, and so on. Renate calculates the sum of a red number and a blue number. What colour can the resulting number be?

- (A) impossible to say                      (B) red or blue                      (C) only green  
(D) only red                      (E) only blue

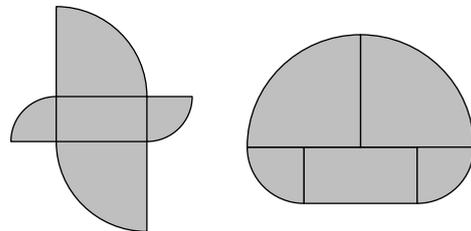
15. The perimeter of the figure below, built up of identical squares, is equal to 42 cm. What



is the area of the figure?

- (A) 8 cm<sup>2</sup>                      (B) 9 cm<sup>2</sup>                      (C) 24 cm<sup>2</sup>                      (D) 72 cm<sup>2</sup>                      (E) 128 cm<sup>2</sup>

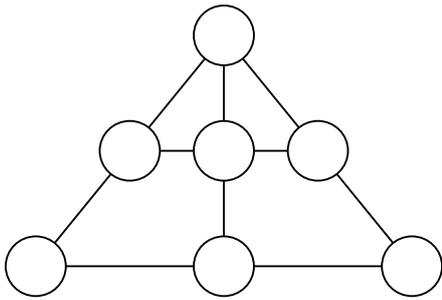
16. Look at the pictures. Both shapes are formed from the same five pieces. The rectangle measures 5 cm × 10 cm, and the other parts are quarters of two different circles. The difference



between the perimeter lengths of the two shapes is

- (A) 2.5 cm                      (B) 5 cm                      (C) 10 cm                      (D) 20 cm                      (E) 30 cm

17. Place the numbers from 1 to 7 in the circles, so that the sum of the numbers on each of the indicated lines of three circles is the same. What is the number at the top of the triangle?

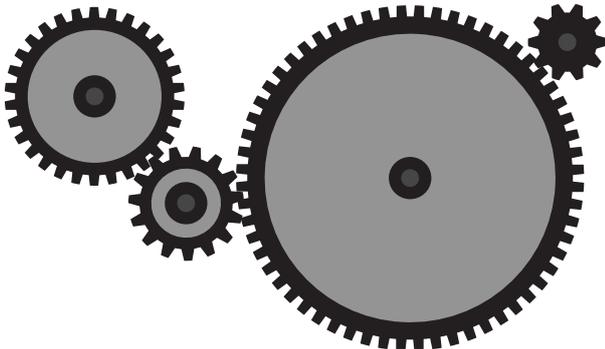


- (A) 1                      (B) 3                      (C) 4                      (D) 5                      (E) 6

18. A rubber ball falls vertically through a height of 10 m from the roof of a house. After each impact on the ground it bounces back up to  $\frac{4}{5}$  of the previous height. How many times will the ball appear in front of a rectangular window whose bottom edge has a height of 5 m and whose top edge has a height of 6 m?

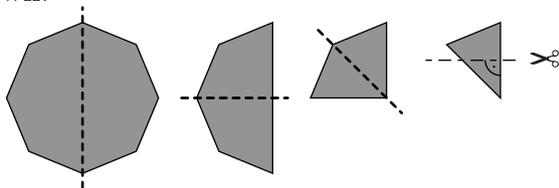
- (A) 3                      (B) 4                      (C) 5                      (D) 6                      (E) 8

19. There are 4 gearwheels on fixed axles next to each other, as shown. The first one has 30 gears, the second one 15, the third one 60 and the last one 10. How many revolutions does the last gearwheel make, when the first one turns through one revolution?



- (A) 3                      (B) 4                      (C) 6                      (D) 8                      (E) 9

20. A regular octagon is folded in half exactly three times until a triangle is obtained, as shown.



Then the apex is cut off at right angles, as shown in the picture. If the paper is unfolded what will it look like?

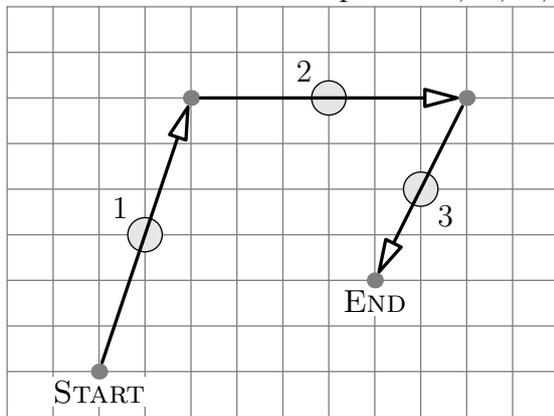
- (A)      (B)      (C)      (D)      (E)

**SECTION THREE - (5 points problems)**

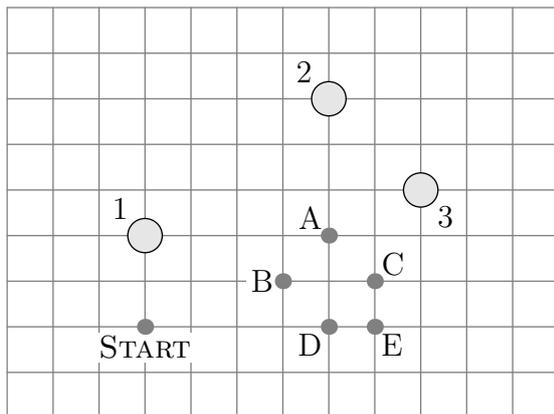
**21.** Winnie’s vinegar-wine-water marinade contains vinegar and wine in the ratio 1 to 2, and wine and water in the ratio 3 to 1. Which of the following statements is true?

- (A) There is more vinegar than wine.
- (B) There is more wine than vinegar and water together.
- (C) There is more vinegar than wine and water together.
- (D) There is more water than vinegar and wine together.
- (E) There is less vinegar than either water or wine.

**22.** Kangaroos Hip and Hop play jumping by hopping over a stone, then landing across so that the stone is in the middle of the segment traveled during each jump. Picture 1 shows how Hop jumped three times hopping over stones marked 1, 2 and 3. Hip has the configuration of stones marked 1, 2 and 3 (to jump over in this order), but starts in a different place as shown on Picture 2. Which of the points A, B, C, D or E is his landing point?



Picture 1: Hop



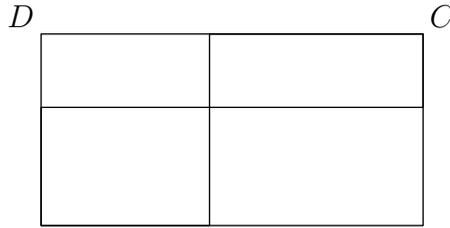
Picture 2: Hip

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

**23.** There were twelve children at a birthday party. Each child was either 6, 7, 8, 9 or 10 years old, with at least one child of each age. Four of them were 6 years old. In the group the most common age was 8 years old. What was the average age of the twelve children?

- (A) 6
- (B) 6.5
- (C) 7
- (D) 7.5
- (E) 8

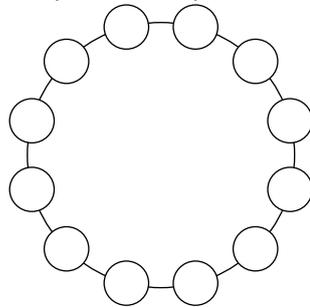
**24.** Rectangle  $ABCD$  is cut into four smaller rectangles, as shown in the figure. The four smaller rectangles have the properties: (a) the perimeters of three of them are 11, 16 and 19; (b) the perimeter of the fourth is neither the biggest nor the smallest of the four. What is the



perimeter of the original rectangle  $ABCD$ ?  $A$

- (A) 28                      (B) 30                      (C) 32                      (D) 38                      (E) 40

**25.** Kanga wants to arrange the twelve numbers from 1 to 12 in a circle such that any neighbouring numbers always differ by either 1 or 2. Which of the following pairs of numbers



have to be neighbours?

- (A) 5 and 6              (B) 10 and 9              (C) 6 and 7              (D) 8 and 10              (E) 4 and 3

**26.** Peter wants to cut a rectangle of size  $6 \times 7$  into squares with integer sides. What is the minimal number of squares he can get?

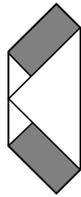
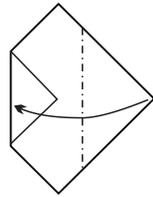
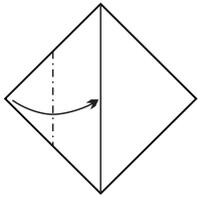
- (A) 4                      (B) 5                      (C) 7                      (D) 9                      (E) 42

**27.** Some cells of the square table of size  $4 \times 4$  were colored red. The number of red cells in each row was indicated at the end of it, and the number of red cells in each column was indicated at the bottom of it. Then the red colour was eliminated. Which of the following tables can be the result?

- |     |   |   |   |   |   |
|-----|---|---|---|---|---|
|     |   |   |   |   | 4 |
|     |   |   |   |   | 2 |
|     |   |   |   |   | 1 |
|     |   |   |   |   | 1 |
| (A) | 0 | 3 | 3 | 2 |   |
- |     |   |   |   |   |   |
|-----|---|---|---|---|---|
|     |   |   |   |   | 1 |
|     |   |   |   |   | 2 |
|     |   |   |   |   | 1 |
|     |   |   |   |   | 3 |
| (B) | 2 | 2 | 3 | 1 |   |
- |     |   |   |   |   |   |
|-----|---|---|---|---|---|
|     |   |   |   |   | 3 |
|     |   |   |   |   | 3 |
|     |   |   |   |   | 0 |
|     |   |   |   |   | 0 |
| (C) | 1 | 3 | 1 | 1 |   |
- |     |   |   |   |   |   |
|-----|---|---|---|---|---|
|     |   |   |   |   | 2 |
|     |   |   |   |   | 1 |
|     |   |   |   |   | 2 |
|     |   |   |   |   | 2 |
| (D) | 2 | 1 | 2 | 2 |   |
- |     |   |   |   |   |   |
|-----|---|---|---|---|---|
|     |   |   |   |   | 0 |
|     |   |   |   |   | 3 |
|     |   |   |   |   | 3 |
|     |   |   |   |   | 1 |
| (E) | 0 | 3 | 1 | 3 |   |

**28.** A square-shaped piece of paper has area  $64 \text{ cm}^2$ . The square is folded twice as shown in the picture. What is the sum of the areas of the shaded rectangles?

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(A)  $10 \text{ cm}^2$

(B)  $14 \text{ cm}^2$

(C)  $15 \text{ cm}^2$

(D)  $16 \text{ cm}^2$

(E)  $24 \text{ cm}^2$

**29.** Abid's house number has 3 digits. Removing the first digit of Abid's house number, you obtain the house number of Ben. Removing the first digit of Ben's house number, you get the house number of Chiara. Adding the house numbers of Abid, Ben and Chiara gives 912. What is the second digit of Abid's house number?

(A) 3

(B) 4

(C) 5

(D) 6

(E) 0

**30.** I give Ann and Bill two consecutive positive integers (for instance Ann 7 and Bill 6). They know their numbers are consecutive, they know their own number, but they do not know the number I gave to the other one. Then I heard the following discussion: Ann said to Bill: "I don't know your number". Bill said to Ann: "I don't know your number". Then Ann said to Bill: "Now I know your number! It is a divisor of 20.". What is Ann's number?

(A) 2

(B) 3

(C) 4

(D) 5

(E) 6