



**MATEMATIKKSENTERET**

Nasjonalt senter for matematikk i opplæringen

**2025**

# KENGURUKONKURRANSEN

Problems in English

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**Cadet**

(9.–10. trinn)





3 points

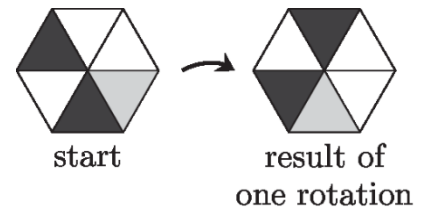
1. Lisa has four wooden digits. She can use them to form the number 2025.

Which of the following numbers is the largest she can form with these digits?



- (A) 2502      (B) 5202      (C) 5220      (D) 5502      (E) 5520

2. Isabelle rotates the hexagonal sheet of paper, as shown. Each rotation turns the hexagon through the same angle in the same direction. The figure shows the result of one rotation.

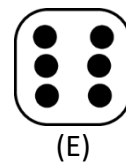
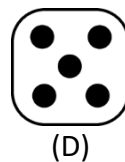
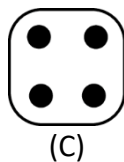
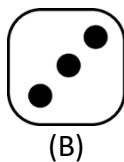
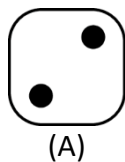


Which of these numbers of rotations would leave the sheet looking the same as it did at the start?

- (A) 7      (B) 8      (C) 9      (D) 10      (E) 12

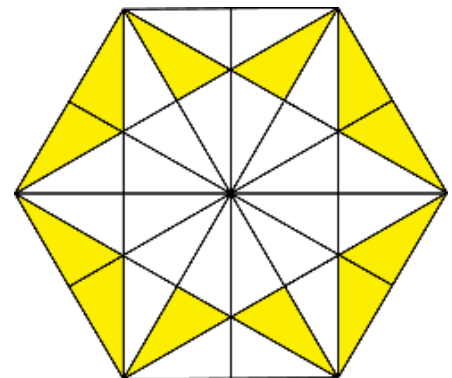
3. Sandra rolls three dice and gets a total of 8. All three dice show a different number of dots.

Which number of dots could Sandra not have rolled on any of her dice?



4. The regular hexagon shown is divided into many triangles of equal area.

Which fraction of the hexagon is shaded?



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

5. How many lots of 12 minutes are there in 12 hours?



Kengurukonkurranzen  
Cadet 2025

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- (A) 60                      (B) 24                      (C) 12                      (D) 10                      (E) 6
- 

6. Daniel is 5 years old. His brother Dominic is 6 years older.

**What will the sum of their ages be in 7 years' time?**

- (A) 26                      (B) 27                      (C) 28                      (D) 29                      (E) 30
- 

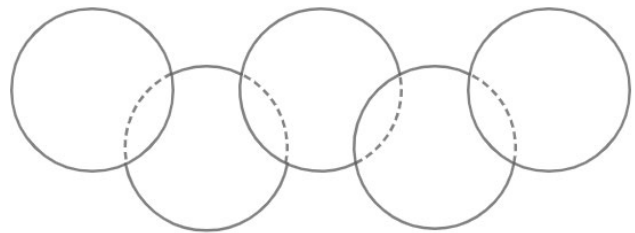
7. Ohad wants to write the four digits 2, 0, 2 and 5 in the four boxes of the calculation shown.

$$\square - \square + \square - \square$$

**What is the smallest result that Ohad could get?**

- (A) -7                      (B) -6                      (C) -5                      (D) -4                      (E) -3
- 

8. Five circles, each with an area of  $8 \text{ cm}^2$ , overlap to form the figure shown. The area of each section where two circles overlap is  $1 \text{ cm}^2$ .



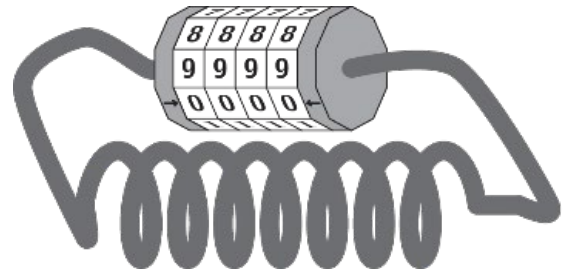
**What is the total area covered by the figure?**

- (A)  $32 \text{ cm}^2$                       (B)  $36 \text{ cm}^2$                       (C)  $38 \text{ cm}^2$                       (D)  $39 \text{ cm}^2$                       (E)  $42 \text{ cm}^2$



4 points

9. The real combination for the bicycle lock shown in the picture is 0000. However, when someone looks at it from the side, they see 8888. When Paul looks at the combination of his friend's lock from the side, he sees 2815.



**What is the real combination of his friend's lock?**

- (A) 4037      (B) 4693      (C) 0639      (D) 0693      (E) 9603

10. There are ten more truth-tellers than liars in a room. Everyone in the room was asked, "Are you a truth-teller?" and everyone gave an answer. A total of 20 people answered, "Yes."

**How many liars are in the room?**

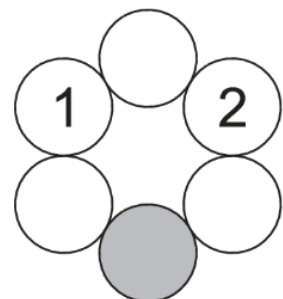
- (A) 0      (B) 5      (C) 15      (D) 20      (E) 25

11. There are five hurdles in a 60 m hurdles race. The first hurdle is after 12 m. The gap between any two consecutive hurdles is 8 m.

**How far is the last hurdle from the finish?**

- (A) 16 m      (B) 14 m      (C) 12 m      (D) 10 m      (E) 8 m

12. Edgar wants to write a number in each circle in the diagram. He wants each number to be equal to the sum of the numbers in the two adjacent circles. He has already written two numbers, as shown.



**What number should he write in the grey circle?**

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



13. Werner is on a treadmill in the gym. He keeps looking at two stopwatches. The first shows the time elapsed since he started his session and the second the time remaining until the end of his session.



At some point the two stopwatches show the same reading.

**What do they show at that point?**

- (A) 17:50      (B) 18:00      (C) 18:12      (D) 18:15      (E) 18:20

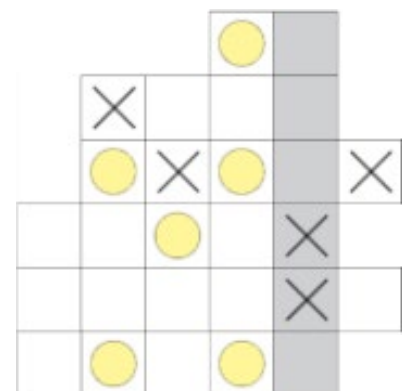
14. Julia wants to fill each  with a different prime number less than 20 so that the value of A is an integer.

$$A = \frac{\boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}}}{\boxed{\phantom{00}}}$$

**What is the maximum value of A?**

- (A) 20      (B) 14      (C) 10      (D) 8      (E) 6

15. Morten wants to fill in the cells on the diagram shown so that each cell contains either a cross or a circle. He also wants to ensure there is no line of four consecutive identical symbols in any column, row or diagonal.



**When has completed the diagram, what will the column coloured grey contain?**

- (A) 3 circles and 3 crosses      (B) 2 circles and 4 crosses      (C) 4 circles and 2 crosses      (D) 5 circles and a cross      (E) a circle and 5 crosses



16. In the six-digit integer PAPAYA, different letters stand for different digits and the same letter always represents the same digit. Also,  $Y = P + P = A + A + A$ .

What is the value of  $P \times A \times P \times A \times Y \times A$ ?

- (A) 432      (B) 342      (C) 324      (D) 243      (E) 234

5 points

17. Sanja has two bowls of numbered balls.

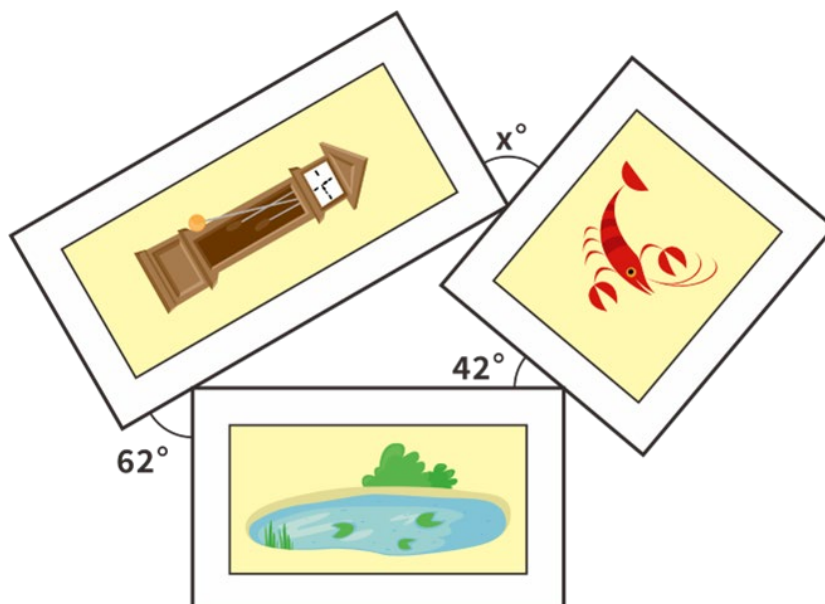
Bowl X contains seven balls numbered 1, 2, 6, 7, 10, 11 and 12.

Bowl Y contains five balls numbered 3, 4, 5, 8, and 9.

Which ball should Sanja transfer from Bowl X to Bowl Y to increase the average number on the balls in each bowl?

- (A) 6      (B) 7      (C) 10      (D) 11      (E) 12

18. Louise places three rectangular pictures in the way shown.



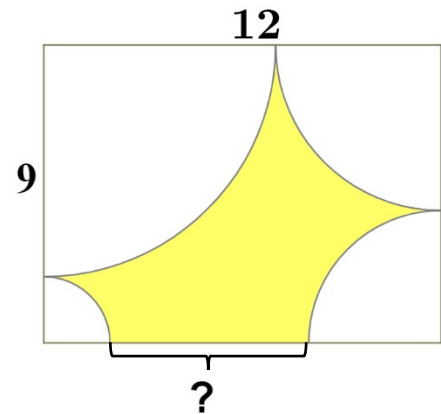
What is the value of  $x$ ?

- (A)  $64^\circ$       (B)  $70^\circ$       (C)  $72^\circ$       (D)  $76^\circ$       (E)  $80^\circ$



19. Peter has drawn a quarter circle with centre at each corner of a flag with dimensions 12 cm by 9 cm and coloured the region formed, as shown.

What is the length indicated by the question mark?



- (A) 5 cm    (B) 6 cm    (C) 7 cm    (D) 8 cm    (E) 9 cm

20. During two sessions of football training, Paul shoots a total of 17 times at a target. He hits with 60% of the shots he shoots in the first session. He hits with 75% of the shots he shoots in the second session.

How many times did he hit the target in the second session?

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

21. Anurag always leaves for school at 8:00 a.m. His school is 1 km away. When he walks, his speed is 4 km/h. When he cycles, his speed is 15 km/h. He is 5 minutes early when he walks.

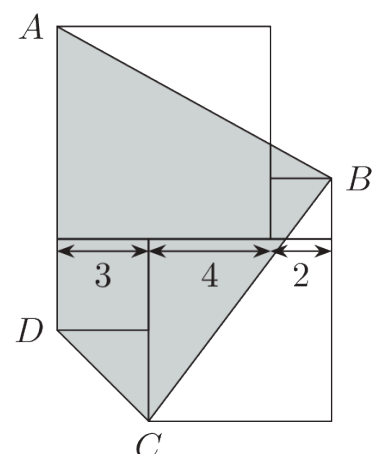
How many minutes early is he when he cycles?

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

22. Ria draws four squares side by side, as shown.

What is the area of the shaded quadrilateral?

- (A) 54    (B) 60    (C) 66    (D) 72    (E) 80





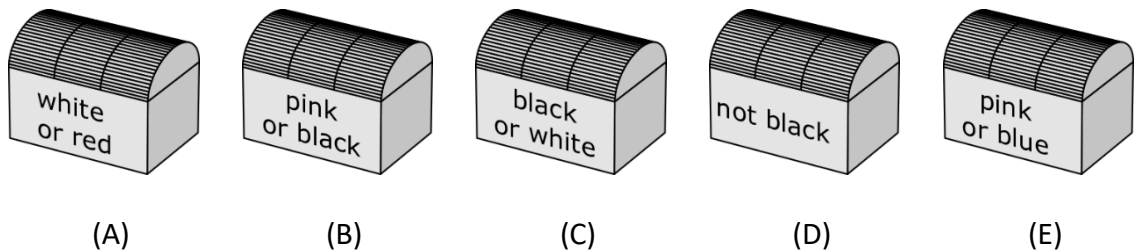
23. The letters  $p$ ,  $q$ ,  $r$ ,  $s$  and  $t$  represent five consecutive positive integers, though not necessarily in that order. The sum of  $p$  and  $q$  is 69 and the sum of  $s$  and  $t$  is 72.

**What is the value of  $r$ ?**

- (A) 29      (B) 31      (C) 34      (D) 37      (E) 39

24. Adira keeps white, red, black, pink and blue pearls in five small boxes. Each box contains pearls of only one colour. The boxes are labeled as shown, and all the labels are true. Adira's friend Lilly wants to know which box contains the white pearls. She may open exactly one of the five boxes to look inside.

**Which box should Lilly open to be certain which of the boxes contains the white pearls?**







Answer sheet for the student

Name: .....

Mark your answer in the schema below

Problem	A	B	C	D	E	Points
1						
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