



Kangaroo 2016 Cadet

(8th and 9th grade)

NAME _____

CLASS _____

Points: _____ Kangaroo leap: _____

Separate this answer sheet from the test. Write your answer under each problem number.

From each wrong answer, $\frac{1}{4}$ of the points of the problem will be deducted, for example for a 4 points problem -1 point. If you leave the answer empty, no deduction will be made.

PROBLEM	1	2	3	4	5	6	7
ANSWER							

PROBLEM	8	9	10	11	12	13	14
ANSWER							

PROBLEM	15	16	17	18	19	20	21
ANSWER							

Contest not to be held before March 17th 2016.

Logo design by Jenna Tuupanen.



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3 points

1.

What does Pipo see when he looks at himself in the mirror?



(A)



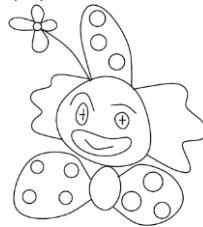
(B)



(C)



(D)

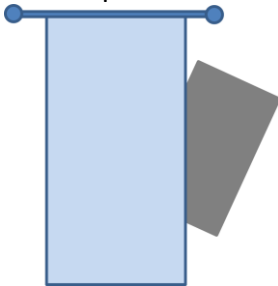


(E)



2.

A rectangular painting is hanging on the wall, partly hidden behind a curtain. What shape is the hidden part?



(A) A triangle

(B) A square

(C) A hexagon

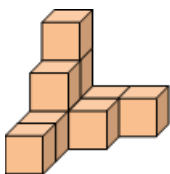
(D) A circle

(E) A rectangle

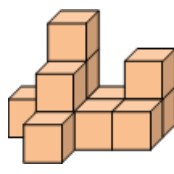
3.

Which shape can we make with 10 cubes?

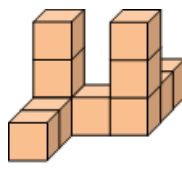
(A)



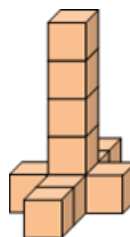
(B)



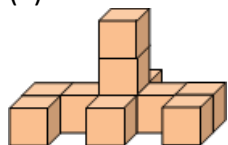
(C)



(D)



(E)





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4.

Alice wants to see a knife on the right side of each plate and a fork on the left side. How many interchanges of a knife and a fork does Alice need to make?



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

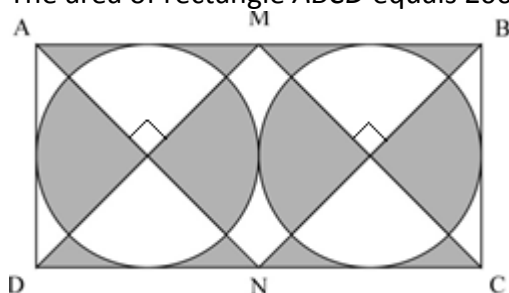
5.

A centipede has 25 pairs of shoes. It needs one shoe for each of its 100 feet. How many more shoes does the centipede need to buy?

- (A) 15 (B) 20 (C) 35 (D) 50 (E) 75

6.

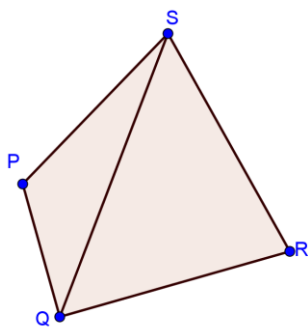
The area of rectangle $ABCD$ equals 200. How large is the shaded area?



- (A) 50 (B) 80 (C) 100 (D) 120 (E) 150

7.

Four towns P, Q, R and S are connected by roads, as shown. A race uses each road exactly once. The race starts at S and finishes at Q. How many possible routes are there for the race?



- (A) 10 (B) 8 (C) 6 (D) 4 (E) 2



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4 points

8.

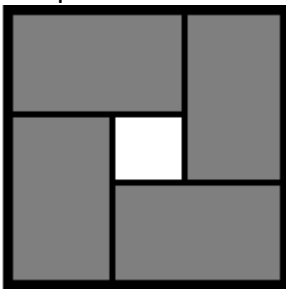
Petra has 49 blue beads and one red bead in her necklace. How many beads must she remove from it so that exactly 90 % of its beads are blue?

- (A) 4 (B) 10 (C) 29 (D) 39 (E) 40

9.

The diagram shows four identical rectangles placed inside a square.

The perimeter of each rectangle is 16 cm. What is the perimeter of the square?



- (A) 16 cm (B) 20 cm (C) 24 cm (D) 28 cm (E) 32 cm

10.

Two pieces of rope have lengths 1 m and 2 m. Alex cuts the pieces into several parts.

All the parts have equal length. Which of the following could not be the total number of parts he obtains?

- (A) 6 (B) 8 (C) 9 (D) 12 (E) 15

11.

Ivor writes down the results of the quarter-finals, the semifinals and the final of a knock-out

tournament. The results are (not necessarily in this order): Bart beat Antony, Carl beat Damien,

Glen beat Henry, Glen beat Carl, Carl beat Bart, Ed beat Fred and Glen beat Ed. Which pair played

in the final?

- (A) Glen and Henry
(B) Glen and Carl
(C) Carl and Bart
(D) Glen and Ed
(E) Carl and Damien

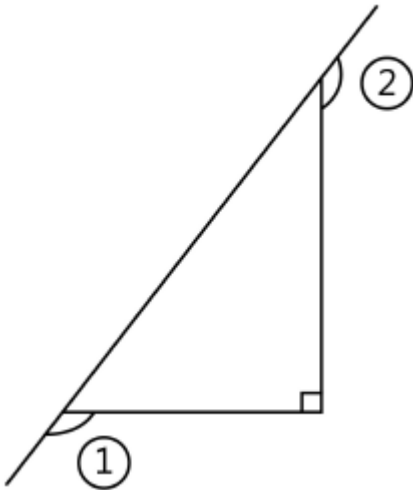


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12.

What is the sum of the two marked angles?



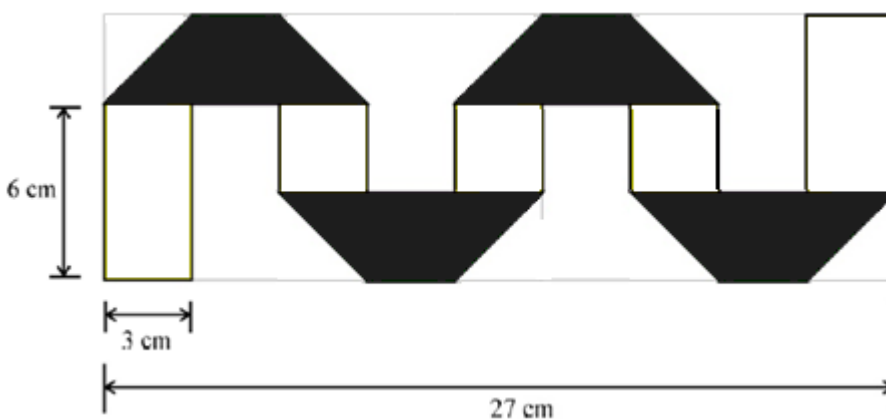
- (A) 150° (B) 180° (C) 270° (D) 320° (E) 360°

13.

Two kangaroos Jum and Per start to jump at the same time, from the same point, in the same direction. After that, they make one jump per second. Each of Jum's jumps is 6 m in length. Per's first jump is 1 m in length, the second is 2 m, the third is 3 m, and so on. After how many jumps does Per catch Jum?

- (A) 10 (B) 11 (C) 12 (D) 13 (E) 14

14.



A 3 cm wide rectangular strip of paper is dark on one side and white on the other. Maria folds the strip, as shown. The dark trapeziums are identical. What is the length of the original strip?

- (A) 36 cm (B) 48 cm (C) 54 cm (D) 57 cm (E) 81 cm

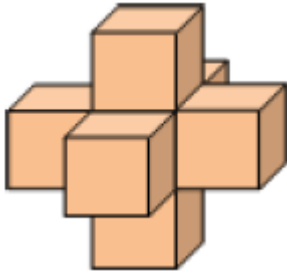


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5 points

15.

Seven standard dice are glued together to make the solid shown. The faces of the dice that are glued together have the same number of dots on them. How many dots are on the surface of the solid?

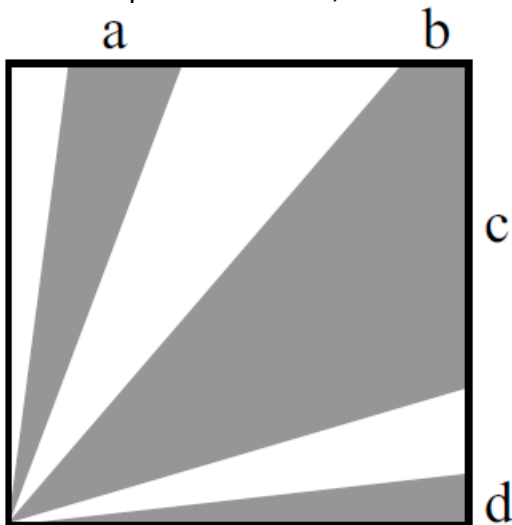


solid?

- (A) 24 (B) 90 (C) 95 (D) 105 (E) 126

16.

Inside a square of area 36, there are shaded regions as shown.



The total shaded area is 27. What is $a + b + c + d$?

- (A) 4 (B) 6 (C) 8 (D) 9 (E) 10

17.

Theo's watch is 10 minutes behind, but he believes that it is 5 minutes ahead. Leo's watch is 5 minutes ahead, but he believes that it is 10 minutes behind. At the same moment, each of them looks at his own watch. Theo thinks it is 12:00. What time does Leo think it is?

- (A) 11:30 (B) 11:45 (C) 12:00 (D) 12:30 (E) 12:45

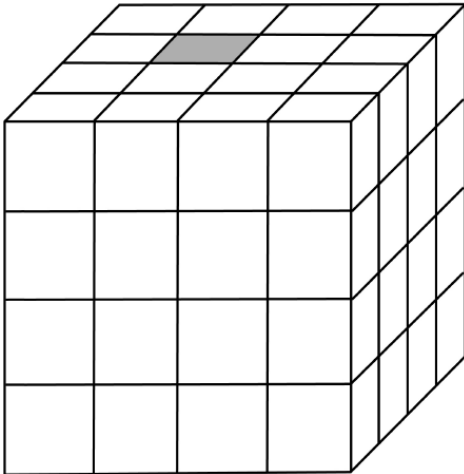


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18.

The cube below is divided into 64 small cubes. Exactly one of the cubes is grey. On the first day, the grey cube changes all its neighbouring cubes to grey (two cubes are neighbours if they have a common face). On the second day, all the grey cubes do the same thing. How many grey cubes are there at the end of the second day?



(A) 11

(B) 13

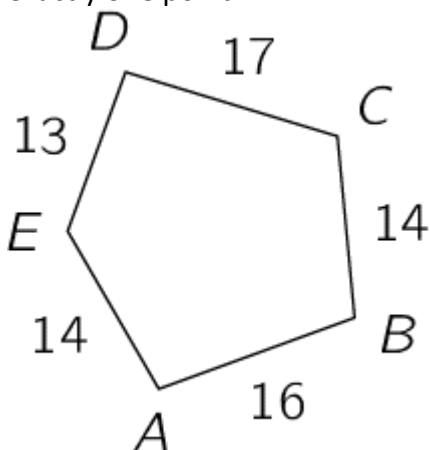
(C) 15

(D) 16

(E) 17

19.

Sepideh draws five circles with centers A, B, C, D, E . Any two adjacent circles touch each other in exactly one point.



Which point is the centre of the largest circle that she draws?

(A) A

(B) B

(C) C

(D) D

(E) E

