



Kangaroo 2014 Cadet

(8th and 9th grade)

NAME _____ CLASS _____

Points: _____ Kangaroo leap: _____

Separate this answer sheet from the test.

Write your answer under each problem number.

For each wrong answer, 1/4 of the points of the problem will be deducted.

If you don't want to answer a question, leave the space empty and 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							



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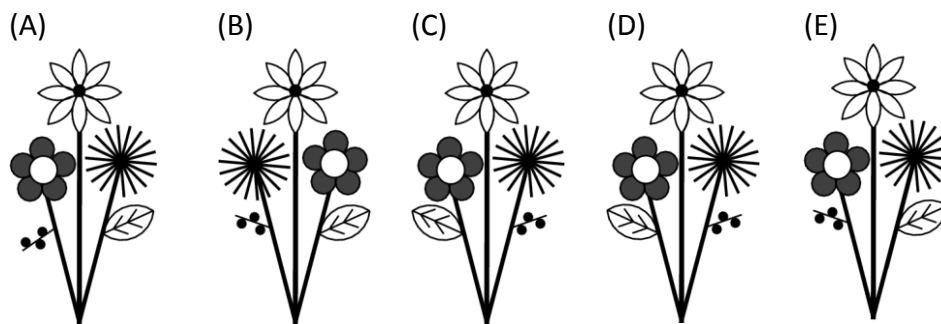
3 points

1.

Mr. Brown has painted flowers on the store window (see picture).



How do these flowers look like from the other side of the window?



2.

Each year, the date of the Kangaroo competition is the third Thursday of March. What is the latest possible date of the competition in any year?

- (A) 14th March (B) 15th March (C) 20th March (D) 21th March (E) 22th March

3.

Jacky wants to insert the digit 3 somewhere in the number 2014. Where should she insert the digit 3 if she wants her five-digit number to be as small as possible?

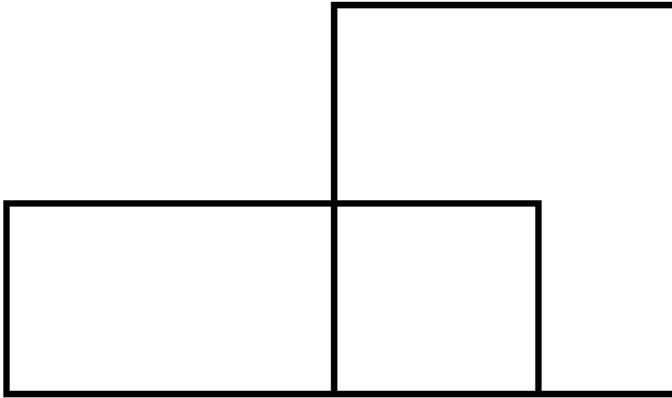
- (A) in front of 2014
 (B) between the 2 and the 0
 (C) between the 0 and the 1
 (D) between the 1 and the 4
 (E) behind 2014



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4.

How many quadrilaterals of any size are shown in the figure?



(A) 2

(B) 4

(C) 5

(D) 6

(E) 7

5.

The product of two positive integers is 36 and their sum is 37. What is their difference?

(A) 1

(B) 4

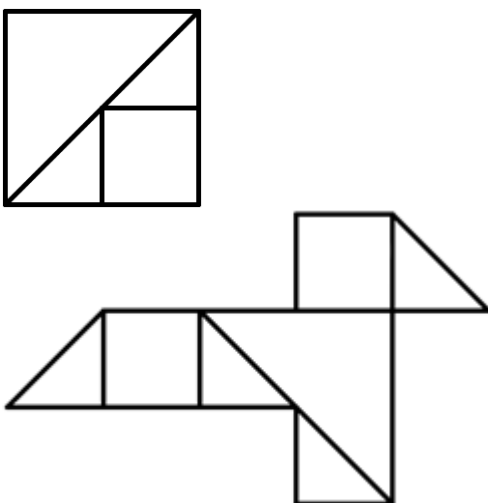
(C) 10

(D) 26

(E) 35

6.

Wanda has several square pieces of paper of area 4. She cuts them into squares and right-angled triangles in the manner shown in the first diagram. She takes some of the pieces and makes the bird shown in the second diagram. What is the area of the bird?



(A) 3

(B) 4

(C) 4,5

(D) 5

(E) 6



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7.

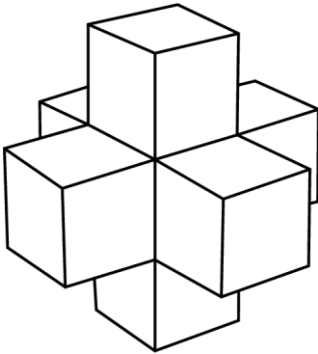
A bucket was half full. A cleaner added 2 litres to the bucket. The bucket was then three-quarters full. What is the capacity of the bucket?

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

4 points

8.

Georg has cubes with edges of length 1. He has built of them the shape shown. How many such cubes does he have to add to make a cube with edges of length 3?



- (A) 20 (B) 18 (C) 16 (D) 14 (E) 12

9.

The necklace in the picture contains grey beads and white beads.



Arno takes one bead after another from the necklace. He always takes a bead from one of the ends. He stops as soon as he has taken the fifth grey bead. What is the largest number of white beads that Arno can take?

- (A) 4 (B) 5 (C) 6 (D) 7 (E) 8

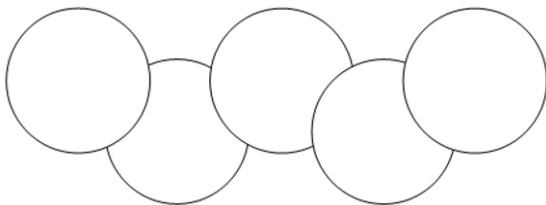


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10.

In the diagram, the area of each circle is 5 cm^2 . The area common to two overlapping circles is 1 cm^2 . What is the area of the region covered by the five circles?



- (A) 15 cm^2 (B) 16 cm^2 (C) 18 cm^2 (D) 21 cm^2 (E) 24 cm^2

11.

Jack has a piano lesson twice a week, always on the same days of week and Hannah has a piano lesson every other week, always on the same day of week. In a given term, Jack has 15 more lessons than Hannah. How many weeks long is their term?

- (A) 10 (B) 15 (C) 20 (D) 25 (E) 30

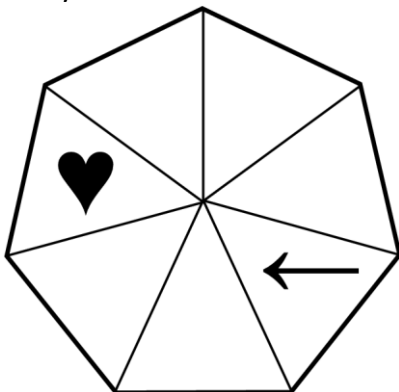
12.

This year a grandmother, her daughter and her granddaughter noticed that the sum of their ages is 100 years. Each of their ages is a power of 2. How old is the granddaughter?

- (A) 1 (B) 2 (C) 4 (D) 8 (E) 16

13.

The heart and the arrow are in the positions shown in the figure. At the same time the heart and the arrow start moving. The arrow moves three places clockwise and the heart moves four places counterclockwise and then stop. They continue the same routine over and over again. After how many routines will the heart and the arrow land in the same triangular region for the first time?



- (A) 7 (B) 8 (C) 9 (D) 10 (E) Never



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17.

Andy enters all the digits from 1 to 9 in the cells of a 3 x 3 table, so that each cell contains exactly one digit. He has already entered 1, 2, 3 and 4, as shown. Two numbers are considered to be 'neighbours' if their cells share an edge. After entering all the numbers he notices that the sum of the neighbours of 9 is 15. What is the sum of the neighbours of 8?

1		3
2		4

- (A) 12 (B) 18 (C) 20 (D) 26 (E) 27

18.

An antique scale shows weights in grams, but is not working properly. If something is lighter than 1000 g, the scale shows the correct number. However, if something is heavier than or equal to 1000 g, the scale can show any number above 1000. We have 5 weights A, B, C, D, E . When they are weighed in pairs, the scale shows the following:

$$B + D = 1200, C + E = 2100, B + E = 800, B + C = 900, A + E = 700.$$

Which of the weights is the heaviest?

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

19.

Liz and Mary compete in solving problems. Each of them is given the same list of 100 problems. For any problem, the first of them to solve it gets 4 points, while the second to solve it gets 1 point. Liz solved 60 problems, and Mary also solved 60 problems. Together, they got 312 points. How many problems were solved by both of them?

- (A) 53 (B) 54 (C) 55 (D) 56 (E) 57

20.

In a castle live only knights, knaves and clowns. Each knight always tells the truth, each knave always lies, and each clown alternates between telling the truth and lying: he/she tells the truth every other time and lies every other time.

When each of them was asked: "Are you a knight?", 17 of them said "Yes".

After that, each of them was then asked: "Are you a clown?", and 12 of them said "Yes".

After that, each of them was then asked: "Are you a knave?", and 8 of them said "Yes".

How many knights live in the castle?

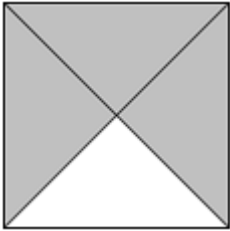
- (A) 4 (B) 5 (C) 9 (D) 13 (E) 17



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21.

A 5×5 square is made from 1×1 tiles, all with the same pattern, as shown. Any two adjacent tiles have the same colour along the shared edge. What is the smallest possible portion of the perimeter of the 5×5 square that is guaranteed to be black?



(A) $1/5$

(B) $1/4$

(C) $3/10$

(D) $7/20$

(E) $2/5$