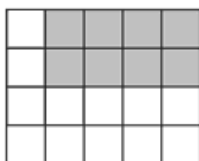


NAME:.....
SURNAME:
SCHOOL:.....
CLASS:.....

ALGEBRA

- Which numeral has the digit 2 in the millions place?
 A. 1,807,629
 B. 82,531,044
 C. 28,162,751
 D. 8,629,794,312
 E. 1,234,567,123
- Which of the following shows the prime factorization of 120?
 A. $2 \times 6 \times 20$
 B. $2 \times 3 \times 20$
 C. $2 \times 3 \times 4 \times 5$
 D. $2 \times 2 \times 3 \times 5 \times 5$
 E. None of the above
- Which fraction is equivalent to $\frac{3}{8}$?
 A. $\frac{8}{11}$
 B. $\frac{9}{16}$
 C. $\frac{9}{24}$
 D. $\frac{5}{16}$
 E. None of the above
- Which list shows all the common factors of 24, 36 and 48?
 A. 1, 2, 3, 4, 6, 12
 B. 2, 6, 12
 C. 1, 2, 3
 D. 1, 3, 4, 6, 8
 E. None of the above
- Which fraction does the shaded part of the figure represent?

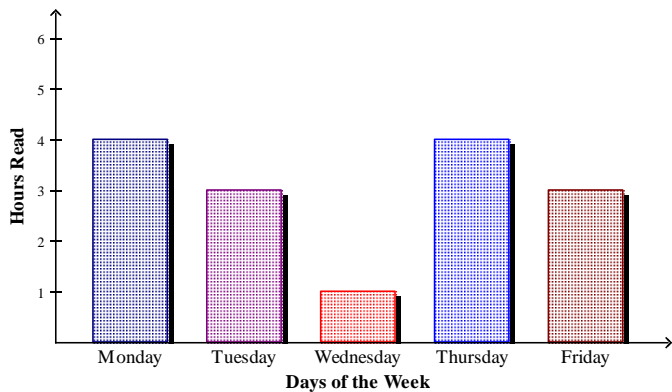


- Which of these is a prime number?
 A. $\frac{8}{22}$
 B. $\frac{2}{5}$
 C. $\frac{3}{5}$
 D. $\frac{12}{20}$
 E. None of the above

- Which of these is a prime number?
 A. 49
 B. 59
 C. 63
 D. 91
 E. 57

- Royce has a bag with 8 red marbles, 4 blue marbles, 5 green marbles, and 9 yellow marbles all the same size. If he pulls out 1 marble without looking, which color is he most likely to choose?
 A. red
 B. blue
 C. green
 D. yellow
 E. none of the above

8. Jonathan's Reading Time

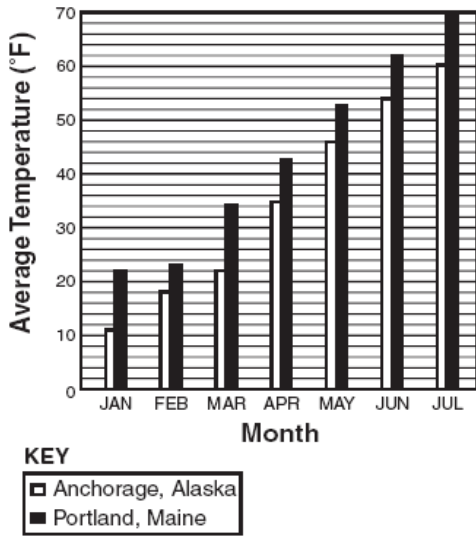


Jonathan reads every day during the week and keeps track of his time. He created this graph to show how much time he read last week. How many hours did Jonathan read on Tuesday and Wednesday?

- A. 3 B. 4 C. 5 D. 7 E. 8

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9.



The graph shows the average temperature in Alaska and Maine from January to July. How much warmer is the average temperature in Portland than in Anchorage in July?

- A. 4°
- B. 5°
- C. 8°
- D. 10°
- E. 70°

10. There are four children in the Smith family. Only one of the children is older than Pete. Sarah is younger than Brad. Kevin is older than Brad. Which lists the children in order from oldest to youngest?

- A. Brad, Pete, Kevin, Sarah
- B. Sarah, Brad, Pete, Kevin
- C. Pete, Sarah, Brad, Kevin
- D. Kevin, Pete, Brad, Sarah
- E. None of the above

11. Three adults and 12 boys are going on a camping trip. They need to buy one sleeping bag for each camper. Each sleeping bag costs \$45. Which number sentence can be used to find the total cost of the sleeping bags?

- A. $45 \times (3 + 12) = \square$
- B. $45 + (3 + 12) = \square$
- C. $45 \div (3 + 12) = \square$
- D. $45 - (3 + 12) = \square$
- E. None of the above

12.

40, 8, 16, 24, 36, 48
Look at the group of numbers above. Which expression describes the numbers in this group ?

- A. Multiples of 8
- B. Factors of 24
- C. Numbers that are divisible by 6
- D. Multiples of 6
- E. None of the above

13. The fifth-grade students collected donations for improvements to a local park. They collected donations at the mall one morning for 2 hours. Then they took a 30-minute lunch break. After lunch they collected donations for 1 hour 35 minutes. They left the mall at 2:00 P.M. At what time did the students arrive at the mall?

- A. 12:25 P.M.
- B. 11:55 A.M.
- C. 9:55 A.M.
- D. 4:55 P.M.
- E. None of the above

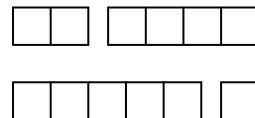
14.

Leave S.F. Time	Arrive N.Y. Time
8:30 A.M.	4:50 P.M.
12:00 noon	8:25 P.M.
3:30 P.M.	11:40 P.M.
9:45 P.M.	5:50 A.M.

The table above shows the flight times from San Francisco (S.F.) to New York (N.Y.). Which flight takes the longest?

- A. The flight leaving at 8:30 A.M.
- B. The flight leaving at 12:00 noon
- C. The flight leaving at 3:30 P.M.
- D. The flight leaving at 9:45 P.M.
- E. None of the above

15.



Aileen broke a candy bar into four unequal pieces before she ate it. Each piece is a fraction of the whole candy bar. Which fraction represents the smallest piece?

- A 1/3 B 5/12 C 1/5 D 1/12 E 2/5

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16. Nodin wants to know what time it is. He looked at the clock on the kitchen wall. What time is it?

Kitchen Wall Clock



- A. 11:15 B. 3:55 C. 2:11 D. 2:55 E. 11:03
17. Which of the following is closest to the weight of a football player?
A. 1,000 kg B. 1 g C. 90 kg D. 1 kg E. 500 kg

18. Paige had three blocks labeled X, Y, and Z. She placed them in pairs in a balance to see which one was heavier.



- What is the order of the blocks, from heaviest to lightest?
A. Z,X,Y B. X,Y,Z C. Y,Z,X D. Y,X,Z E. X=Y=Z

19. In a bowl of jelly beans, $\frac{8}{17}$ of them are red. The beans are counted, and there are 16 red ones. How many jelly beans are in the bowl?

- A. 36 B. 40 C. 34 D. 33 E. 32

20. Find two equivalent fractions for $\frac{6}{14}$

- A. $\frac{3}{7}$ and $\frac{12}{28}$
B. $\frac{7}{3}$ and $\frac{28}{12}$
C. $\frac{2}{7}$ and $\frac{18}{28}$
D. $\frac{24}{56}$ and $\frac{7}{3}$
E. $\frac{18}{42}$ and $\frac{7}{3}$

21. Write $7 + 0.1 + 0.07 + 0.007$ in standard form.

- A. 70.177 B. 7.0177 C. 7.1707 D. 7.177 E. 7.717

22. ABC Shoes is in competition with High Low Shoes.

Both stores sell the High Runner brand of shoes. ABC Shoes sells the shoes for \$56.50, but High Low Shoes sells them for \$25.30. If ABC Shoes decides to offer a 10% discount, estimate what the new price will be and identify which store will have the better price.

- A. New price = \$49.50

High Low Shoes will have the better price.

- B. New price = \$22.50

High Low Shoes will have the better price.

- C. New price = \$49.50

ABC Shoes will have the better price.

- D. New price = \$5.50

ABC Shoes will have the better price.

- E. None of the above

23.

Math Quiz #2				
85	75	85	85	80
80	85	75	80	90

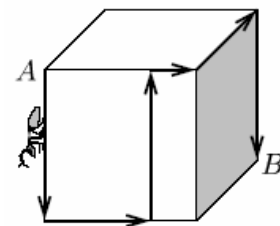
What is the mode of the quiz scores shown in the table?

- A. 75 B. 80 C. 85 D. 90 E. 95

24. $2005 \times 100 + 2005 =$

- A) 2005002005 B) 20052005 C) 20072005
D) 202505 E) 22055

- 25.



An ant is walking from point A to point B on a cube along the indicated path. The edge of the cube is 12 cm long. How far does the ant need to travel?

- A) 40 cm B) 48 cm C) 50 cm D) 60 cm E) 36 cm

26. On a shelf, there are 24 balls in three colors: white, red and brown. $\frac{1}{8}$ of them are white, and $\frac{2}{3}$ of the rest of the balls are red. How many of them are brown?

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

27. Tom picked a natural number and multiplied it by 3. Which number CANNOT be the result of this multiplication?

- A) 987 B) 444 C) 204 D) 105 E) 103

28. How many two digit numbers are there, which can be expressed only by using different odd digits?

- A) 15 B) 20 C) 25 D) 30 E) 50

29. The number of all divisors of 100 is equal to

- A) 3 B) 6 C) 7 D) 8 E) 9

30. The value of the expression

$$\frac{2003 + 2003 + 2003 + 2003 + 2003}{2003 + 2003}$$

is equal to:

- A. 2003 B. 3 C. 1/3 D. 2.5 E. 6009

31. There are five containers in a treasure chest, in each container there are three boxes and in each box there are 10 golden coins. The treasure chest, the containers, and the boxes are all locked. How many locks do you need to open to get 50 coins?

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

32. Which of these inequalities is true?

- A. $0.4 > 0.04$
 B. $0.004 > 0.4$
 C. $0.04 < 0.004$
 D. $0.4 < 0.004$
 E. None of the above

33. What is the remainder when you divide 20042003 by 2004?

- A) 0 B) 1 C) 2 D) 3 E) 2003

34. The weight of 3 apples and 2 oranges is 255 g. The weight of 2 apples and 3 oranges is 285 g. Each apple weighs the same and each orange weighs the same. What is the combined weight of 1 apple and 1 orange?

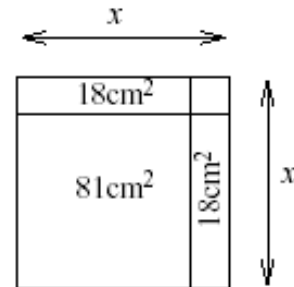
- A) 110 g B) 108 C) 105 g D) 104 g E) 102 g

35. We subtracted the smallest three-digit number with all different digits from the greatest three-digit number with all different digits. The result was:

- A) 864 B) 885 C) 800 D) 899 E) 867

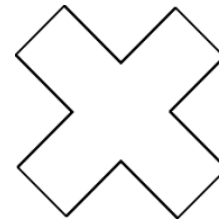
GEOMETRY

36. A square with the length of side equal to x consists of a square with an area of 81 cm^2 , two rectangles with areas of 18 cm^2 each, and a small square. What is the value of x ?



- A) 2 cm B) 7 cm C) 9 cm D) 10 cm E) 11 cm

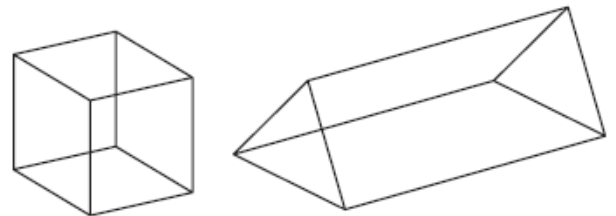
37. Justin's art class was studying symmetrical balance and lines of symmetry. Justin drew this cross-shaped polygon.



How many lines of symmetry does this polygon have?

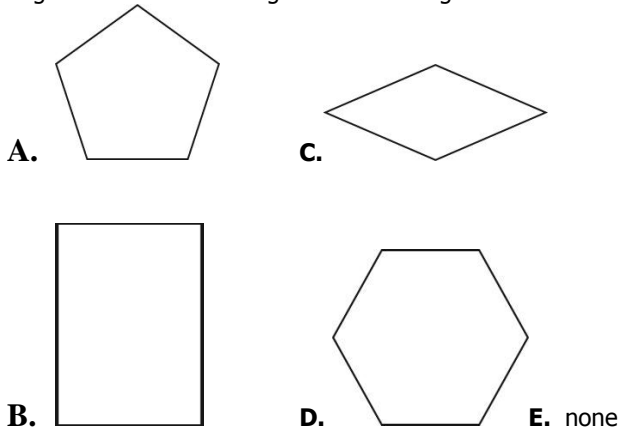
- A. 1 B. 2 C. 3 D. 4 E. 5

38. How many more vertices does a cube have than a triangular prism?

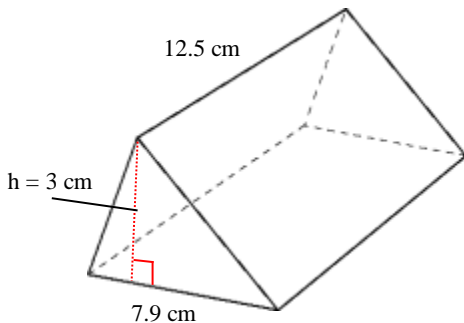


- A. 2
 B. 6
 C. 8
 D. 14
 E. 10

39. Which of the following figures appears to have two obtuse angles and two acute angles inside the figure?



40. Find the volume of the triangular prism.



- A. 148.125 cm^3
- B. 296.25 cm^3
- C. 24.35 cm^3
- D. 319.95 cm^3
- E. None of the above

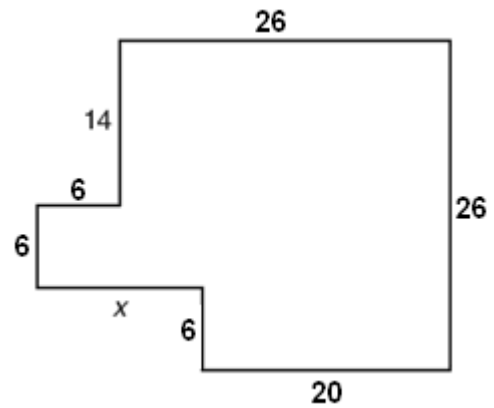
41. Lee drew the rectangular shape below.



If the length of the rectangle is increased by 2 units, what must happen to the perimeter of the rectangle?

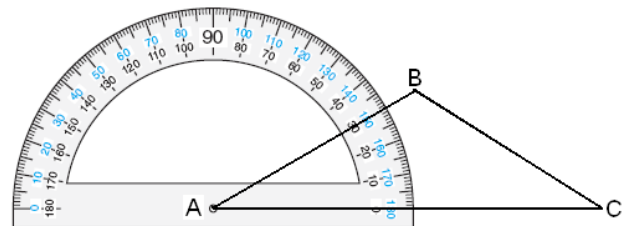
- A. The perimeter must increase by 2 units.
- B. The perimeter must decrease by 2 units.
- C. The perimeter must increase by 4 units.
- D. The perimeter must decrease by 4 units.
- E. None of the above

42. The polygon below has a perimeter of 116 units. What is the length of x ?



- A. 6 units
- B. 18 units
- C. 12 units
- D. 10 units
- E. 22 units

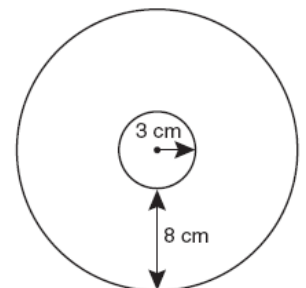
43. Triangle ABC is shown below. Sides AB and BC are congruent. Find $m(\hat{C}) = ?$



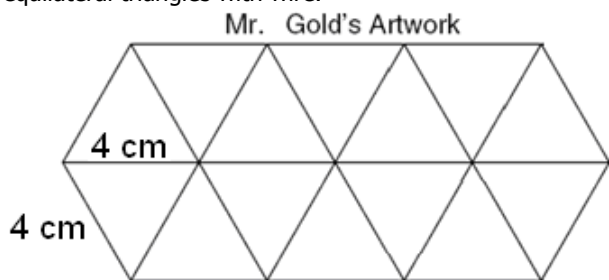
- A. 30°
- B. 50°
- C. 100°
- D. 80°
- E. 70°

44. The drawing shows 2 circles that share a common center point. Which expression can be used to find the approximate circumference of the outer circle in centimeters?

- A. $\pi (3 + 8)$
- B. $\frac{1}{2} (3 + 8)$
- C. $2\pi (3 + 8)$
- D. $2(3 + 8)$
- E. None of the above

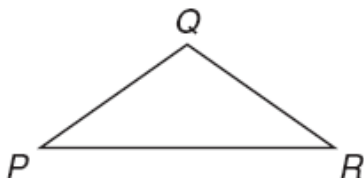


45. Mr. Gold designed a piece of art by outlining equilateral triangles with wire.



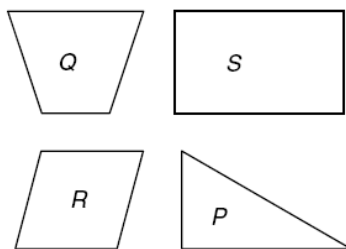
How much wire did Mr. Gold use to complete her piece of art?

- A. 90 cm
 B. 104 cm
 C. 120 cm
 D. 144 cm
 E. 169 cm
46. Find the perimeter of the square whose area is $(A+1)^2$ cm^2 ?
- A. A cm B. 4A cm C. $(4A + 1)$ cm
 D. $(4A + 4)$ cm E. $(2A + 4)$ cm
47. Triangle PQR is an isosceles triangle. The length of side PQ is equal to the length of side QR.



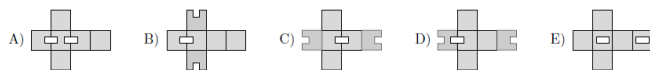
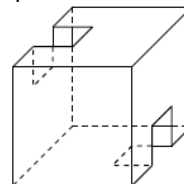
If $m(\widehat{P}) = 55^\circ$, what is $m(\widehat{Q})$?

- A. 55°
 B. 70°
 C. 110°
 D. 180°
 E. 65°
48. Which statement about the figures shown below is true?

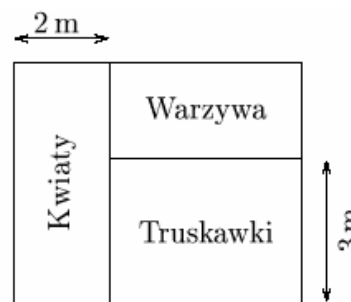


- A. Figures R and S are similar.
 B. Figures Q and P each have parallel sides.
 C. Figures Q and R each have at least 2 obtuse angles.
 D. Figures S and P each have all acute angles.
 E. None of the above

49. Out of which figure below can you make the box shown in the picture?



50. A rectangular garden with an area of 30 m^2 was divided into three rectangular sections of flowers (kwiaty), vegetables (warzywa), and strawberries (truskawki). Some of the dimensions are shown in the diagram. What is the area of the vegetable section, if the flower part has an area of 10 m^2 ?



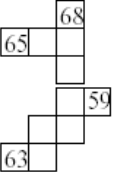
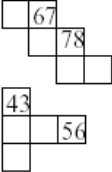
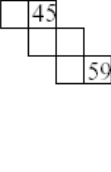
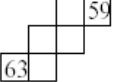
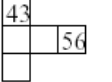
- A) 4 m^2 B) 6 m^2 C) 8 m^2 D) 10 m^2 E) 12 m^2

APTITUDE

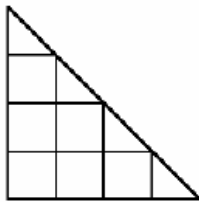
51. Aisha is drawing flowers of different colors. The first flower is blue, then white, red, yellow, and again blue, white, red, yellow, and so on in the same order. What is the color of the twenty ninth flower drawn by Aisha ?
- A) Blue B) White C) Red D) Pink E) Yellow
52. Today the date is 04.03.2017 and the time is 22:03 (10:03 P.M.) What will be the date after 2017 minutes?
- A) 04.03.2017 B) 05.03.2017 C) 06.03.2017
 D) 04.04.2017 E) 06.04.2017

53. John is writing the numbers from 0 to 109 into a five-column table using a rule which is easy to understand (see the picture below). Which of the pieces below can not be filled in with numbers to fit John's table?

0	2	4	6	8
1	3	5	7	9
10	12	14	16	18
11	13	15	17	19
20	22	24	26	28

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

54. How many more triangles than squares are shown in the picture?



- A) 4 more B) 2 more C) 1 more D) 5 more E) 3 more
55. Scott is making a design with square tiles. In each step, he alternates solid and pattern tiles.


1 tile
1st step


4 tiles
2nd step

9 tiles
3rd step

16 tiles
4th step

Key

 solid tile

 pattern tile

According to the pattern, how many **pattern tiles** will Scott use all together in the 6th step?

- A. 13 B. 18 C. 21 D. 28 E. 32

56. During a competition in the X Summer Camp, students were given 10 problems to solve. For each correct answer a student was given 5 points and for each incorrect one the student was losing 3 points. Everybody solved all the problems. Mathew got 34 points, Philip got 10 points and John got 2 points. How many problems did they answer correctly all together?

- A) 17 B) 1 C) 15 b D) 13 E) 21

57. In each of the little squares Karolina places one of the digits: 1, 2, 3, 4. She makes sure that in each row and each column each of these numbers is placed. In the figure below, you can see the way of filling these squares.

What number should she put in the square marked with an x ?

1		x	2
4	1		
	3		
	2		

- A) 1 B) 2 C) 3 D) 4 E) Cannot be determined.

58. Which four beads below need to be added to this string:

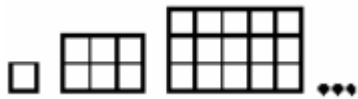


- A)  B)  C)  D)  E) 

59. A train has four cars in four colors: red, green, white and yellow. The green car is not the first nor the last. The yellow car is not next to the white car nor next to the red car. The first car is white. What is the order of the cars in that train?

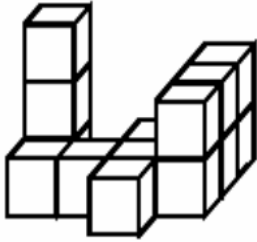
- A. White, green, red, yellow
 B. White, yellow, green, red
 C. Green, yellow, red, white
 D. Red, white, green, yellow
 E. White, red, green, yellow

60. Which figure is next in the sequence:



- A) B) C) D) E)

61.



How many blocks were used to build the figure shown in the picture above ?

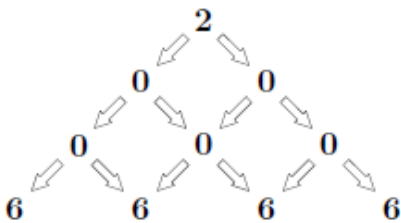
- A) 7 B) 12 C) 13 D) 14 E) 16

62. What is the greatest number we can get arranging six cards in one row, one after another, with numbers shown in the picture?



- A) 6 475 413 092 B) 4 130 975 642 C) 3 097 564 241
D) 7 564 413 092 E) 7 645 413 092

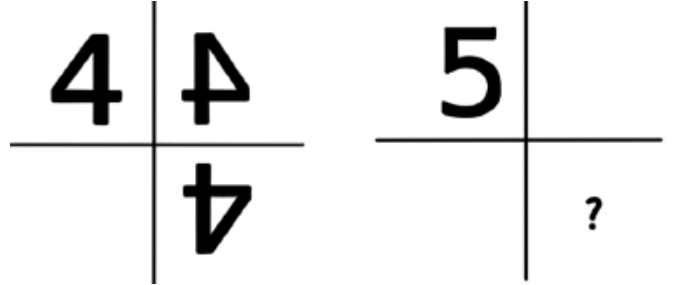
63.



With how many ways can you get the number 2006 while following the arrows on the figure?

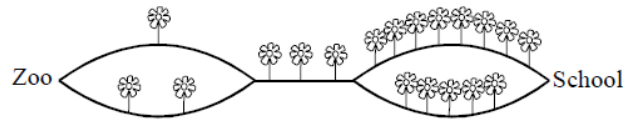
- A) 12 B) 11 C) 10 D) 8 E) 6

64. The number 4 is next to two mirrors so it reflects twice as shown. When the same thing happens to number 5, what do we get in the place of the question mark?



- A) B) C) D) E)

65.



Small Kangaroo goes directly from Zoo to School. He counts each flower on the way. Which of the following number cannot be his result?

- A) 9 B) 10 C) 11 D) 12 E) 13

66. Ben has selected a number, has divided it by 7, then added 7 and finally multiplied the sum by 7. That way he comes up with the number 777. Which number did he select?

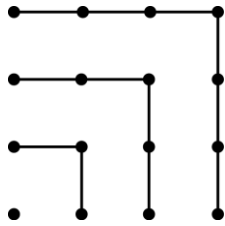
- A) 7 B) 111 C) 722 D) 567 E) 728

67. By what can be replaced to have:

$$\text{Kangaroo} \times \text{Kangaroo} = 2 \times 2 \times 3 \times 3 \times ?$$

- A) 2 B) 3 C) 2 X 3 D) 2 X 2 E) 3 X 3

68. Using the picture below, we can observe that $1+3+5+7 = 4 \times 4$.
What is the value of $1 + 3 + 5 + 7 + \dots + 17 + 19 + 21$?



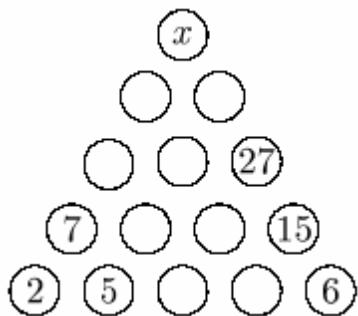
- A) 10×10 B) 11×11 C) 12×12
D) 13×13 E) 14×14
69. Which of the following expressions has a different value?

- A) $20 \times 10 + 20 \times 10$
B) $20 \div 10 \times 20 \times 10$
C) $20 \times 10 \times 20 \div 10$
D) $20 \times 10 + 10 \times 20$
E) $20 \div 10 \times 20 + 10$

70. The next day after his birthday Jas said: "The day after tomorrow will be Thursday." On what day of the week did Jas have his birthday?

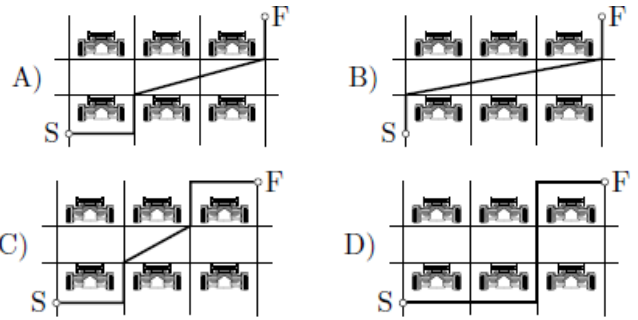
- A) On Monday B) On Tuesday C) On Wednesday
D) On Thursday E) On Friday

71. What number should replace x , if we know that the number in the circle in the upper row is the sum of the numbers from the two circles right below it.



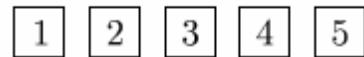
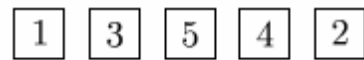
- A) 32 B) 50 C) 55 D) 82 E) 100

72. Six cars are parked in a parking lot in two rows. Which of the paths from S to F is the shortest?



- E) All are equal.

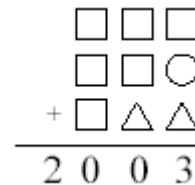
- 73.



- There are five cards on the table, labeled with numbers 1 to 5 as shown in the top row. One move consists of switching two cards. How many moves do you need to make so that the cards are arranged in the way shown in the bottom row?

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

- 74.



- In the addition, every square stands for a certain digit, every triangle stands for another specific digit, and every circle denotes yet another digit. What is the sum of the numbers represented by the square and the circle?

- A) 6 B) 7 C) 8 D) 9 E) 13

75. During the race, right before the finish line, I passed the runner who won the third place. What place did I win?

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

END OF THE EXAM