

# Abel Mathematics Contest

Grades 4 and 5  
May 2017



"It appears to me that if one wishes to make progress in mathematics,  
one should study the masters and not the pupils."

**Niels Henrik Abel**  
1802-1829

## **Instructions:**

1. Calculators may be used.
2. Select the best answer.
3. Transfer your answers to the Answer Form.
4. Diagrams are not always drawn to scale.
5. The time limit for the Niels Henrik Abel Mathematics Contest is one hour.

1. 6 tens + 3 hundreds + 4 thousands

- A. 634            B. 6340            C. 4306            D. 4360

2. Which of the following shapes has five sides?

- A. rhombus                      B. pentagon  
C. hexagon                      D. decagon

3. Solve for the value of y.

$$30 = 5y$$

- A. 150                      B. 25  
C. 6                      D.  $\frac{1}{6}$

4. Jasmine has three 25 cent coins and two 10 cent coins. She needs \$8.80 to buy a gift. How much more money does she need to earn?

- A. \$6.60            B. \$7.85            C. \$8.45            D. \$9.75

5. Josie has walked 6 kilometres along a hiking trail. The trail is 10 kilometres long from start to finish. What fraction of the trail has Josie not travelled?

- A.  $\frac{1}{5}$             B.  $\frac{2}{5}$             C.  $\frac{3}{5}$             D.  $\frac{4}{5}$

6. Which number below is closest in size to  $\frac{1}{4}$  ?

- A. 0.24            B. 0.239            C. 0.241            D. 0.253

7. Arrange from smallest to largest:  $\frac{3}{5}$ ,  $\frac{7}{10}$ ,  $\frac{10}{20}$ ,  $\frac{1}{4}$

A.  $\frac{1}{4}$ ,  $\frac{10}{20}$ ,  $\frac{3}{5}$ ,  $\frac{7}{10}$

B.  $\frac{3}{5}$ ,  $\frac{1}{4}$ ,  $\frac{10}{20}$ ,  $\frac{7}{10}$

C.  $\frac{1}{4}$ ,  $\frac{3}{5}$ ,  $\frac{7}{10}$ ,  $\frac{10}{20}$

D.  $\frac{10}{20}$ ,  $\frac{3}{5}$ ,  $\frac{7}{10}$ ,  $\frac{1}{4}$

8. If two days after today is Tuesday, then 12 days before today would be \_\_\_\_\_

A. Friday

B. Monday

C. Tuesday

D. Saturday

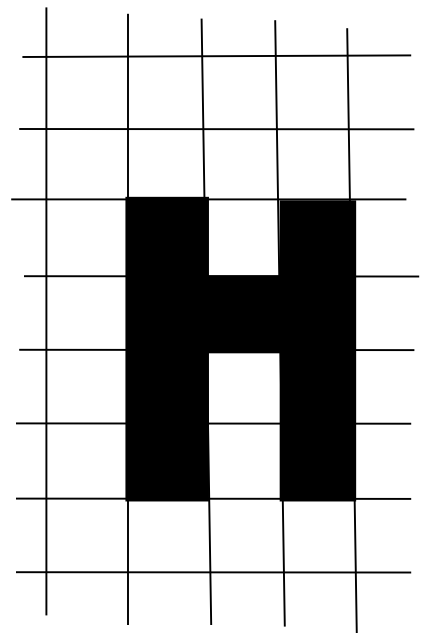
9. What is the area and perimeter of the shaded region?

A. Area = 9 sq. units    Perimeter = 20 units

B. Area = 9 sq. units    Perimeter = 22 units

C. Area = 12 sq. units    Perimeter = 20 units

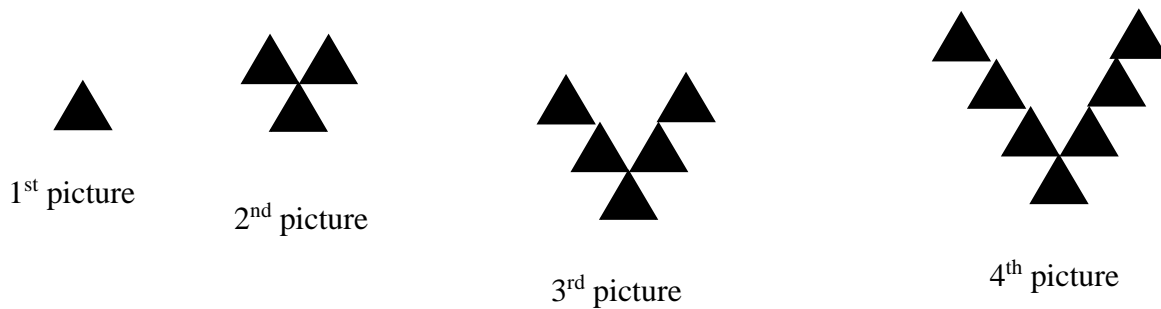
D. Area = 12 sq. units    Perimeter = 22 units



10. Gwen saw the moon at 7:20 pm but Sophie saw the moon 2 hours and 23 minutes earlier. What time did Sophie see the moon?

- A. 5:03 pm      B. 9:43 pm      C. 4:57 pm      D. 4:97 pm

11. If the pattern below continues, how many triangles will be in the 6<sup>th</sup> picture?



- A. 11      B. 12      C. 13      D. 15

12. Estimate the smallest number of 'smiley faces' needed to completely cover the rectangle shown below. (note: the smiley faces can be cut into smaller pieces)



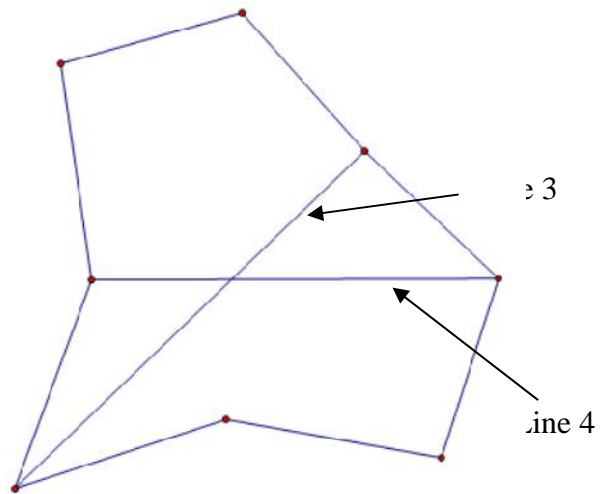
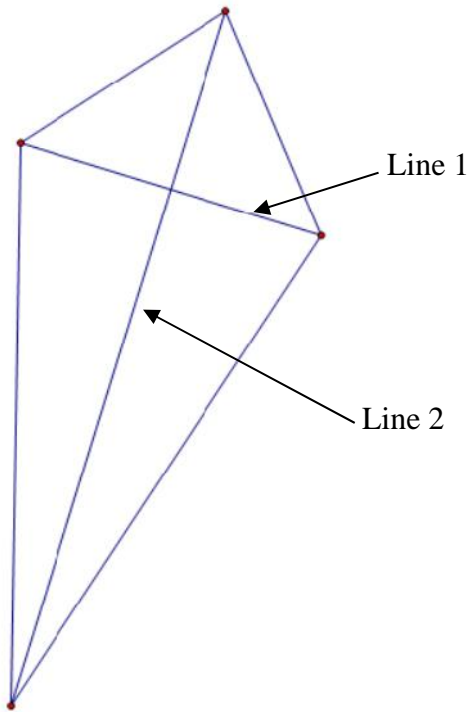
- A. about 10      B. about 20  
C. about 30      D. about 40

13. Which of the following statements is true?

- A. The perimeter of a rectangle is equal to its length plus its width.
- B. The area of a triangle is the distance around the triangle.
- C. The area of a square is equal to 4 multiplied by its length.
- D. Increasing the perimeter of a square, will increase its area.

14. Which line(s) below, are lines of symmetry?

- A. Line 1 only
- B. Lines 1 and 2 only
- C. Lines 2 and 3 only
- D. Lines 1, 2, 3 and 4



15. How many multiples of 8 are between 65 and 403?

- A. 40                      B. 41                      C. 42                      D. 43

16. Joe uses circles to create the pattern below.  
How many circles will he use in the 6<sup>th</sup> figure?



Figure 1

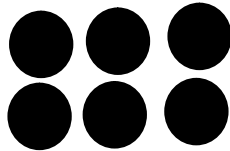


Figure 2

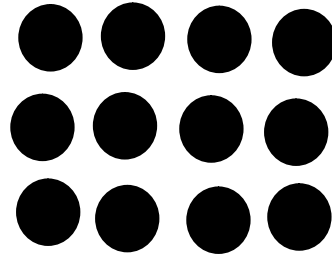


Figure 3

- A. less than 30                      B.  $6 \times 7$
- C.  $6 \times 8$                               D. more than 50
17. Manjit has an odd number of \$5 dollar bills and an even number of \$1 coins. Her total amount of money must be \_\_\_\_\_
- A. divisible by 7                      B. a multiple of 3
- C. even                                      D. odd

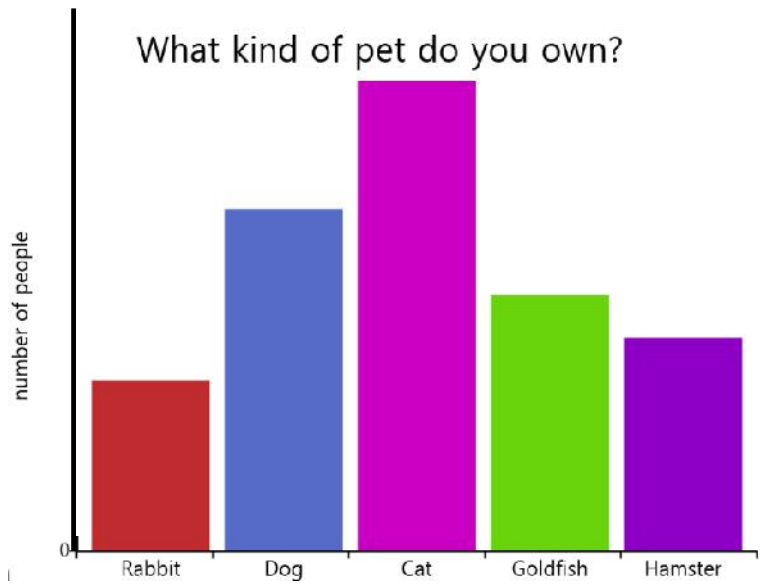
18. For the survey results graphed below, estimate the **fraction** of people that own a rabbit.

A.  $\frac{1}{9}$

B.  $\frac{1}{5}$

C.  $\frac{4}{9}$

D.  $\frac{4}{15}$



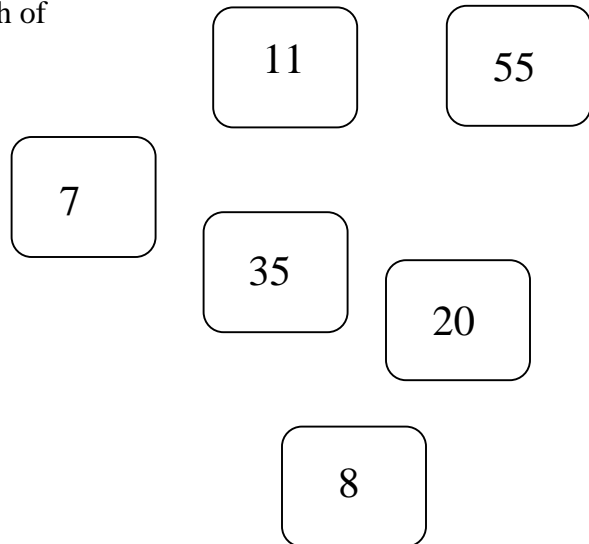
19. Six numbers are shown on the right. If one of the numbers is randomly selected, which of the following results is most likely?

A. selecting an even number

B. selecting a multiple of 11

C. selecting a two digit number

D. selecting a number less than 20

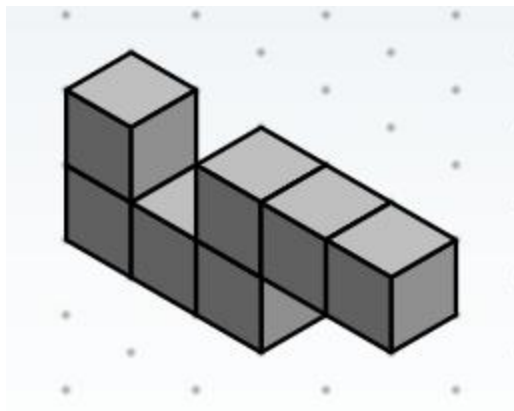


20. If a tree continues to grow 12 centimetres every 4 months, how many **years** will it take to grow 216 centimetres?

- A. 1.8 years
- B. 4.5 years
- C. 6 years
- D. 7.2 years

21. How many square faces are on the object below?

Note: consider all directions: top, bottom, front, back, left, right

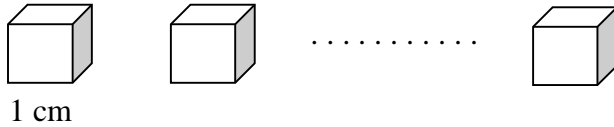


- A. 30
- B. 32
- C. 36
- D. 42



22. A rectangular prism is formed by connecting several cubes like those shown below.

The height, width, and length of the prism are **all greater than 1 cm**.

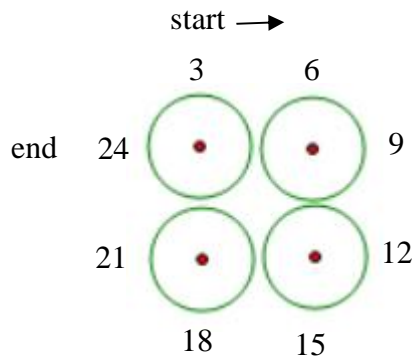


Which number of cubes below could form the rectangular prism?

- A. 22                      B. 39                      C. 54                      D. 65

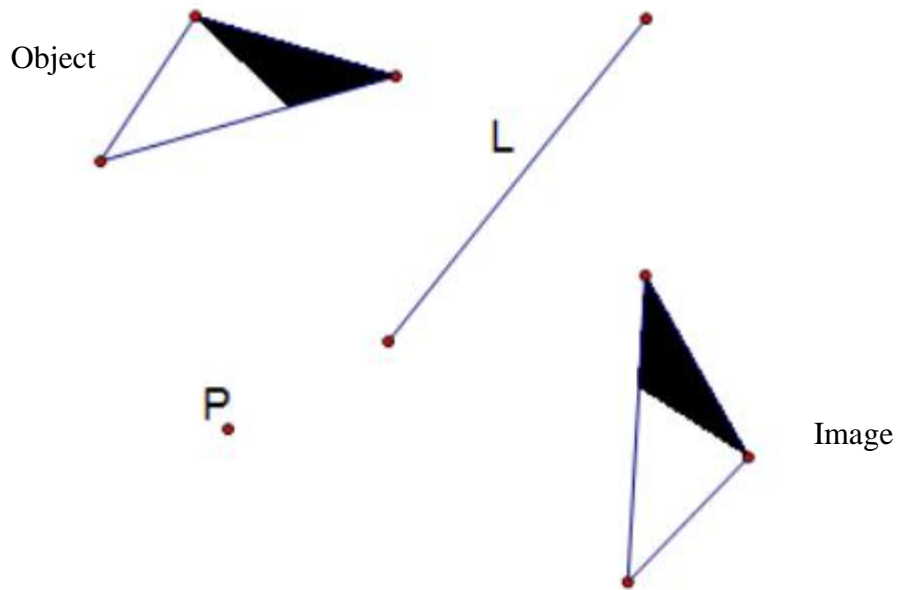
23. The number pattern along the perimeter of the 2 by 2 group of circles below starts with a 3 and ends with a 24.

If the same pattern is on a 6 by 8 group of circles, the numbers would start 3, 6, 9, . . . and then end at what number?



- A. 42                      B. 84                      C. 112                      D. 144

24. Which of the following statements describes the transformation shown below?



- A. The object was rotated  $90^\circ$  around point P
- B. The object was rotated  $180^\circ$  around point P
- C. The object was translated across line L
- D. The object was reflected about line L

25. A rectangle has an area of  $120 \text{ cm}^2$ . If the length and the width are whole numbers, which of the following perimeters is possible?

- A. 30 cm
- B. 42 cm
- C. 62 cm
- D. 68 cm