

Print ID # \_\_\_\_\_

School Name \_\_\_\_\_

Student Name \_\_\_\_\_ (Print First, Last)

100

### 2015 Edmonton Junior High Math Contest

Part A: Multiple Choice

Part B (short answer)

Part C(short answer)

1.	8.	14.
2.	9.	15.
3.	10.	16.
4.	11.	17.
5.	12.	18.
6.	13.	19.
7.		

<b>Part A:</b> _____ × 4 + _____ × 2 = _____	Blank answers ≤ 3.
Correct	blank
<b>Part B:</b> _____ × 5 = _____	MARKER ONLY
Correct	
<b>Part C:</b> _____ × 7 = _____	
Correct	
<b>Total:</b>	= _____

#### Instructions:

1. Calculator, grid paper and scrap paper are permitted. You may write on the booklet.
2. Programmable calculators and cell phones are not allowed.
3. Each correct answer in Part A is worth 4 points, each correct answer in Part B is worth 5 points, and each correct answer in Part C is worth 7 points. In Part A each blank is worth 2 points each up to a maximum of 3 blanks.
4. Each incorrect answer is worth 0 points.
5. Unanswered questions in Parts B and C are worth 0 points.
6. You have 60 minutes of writing time.
7. All participants (grade 7 to 9) in the same school MUST write at the same time.
8. When done, carefully REMOVE and HAND IN this TOP page. You may keep the contest.
9. DO NOT discuss or post any answers on social media.

GOOD LUCK!

**Edmonton Junior High Math Contest 2015**

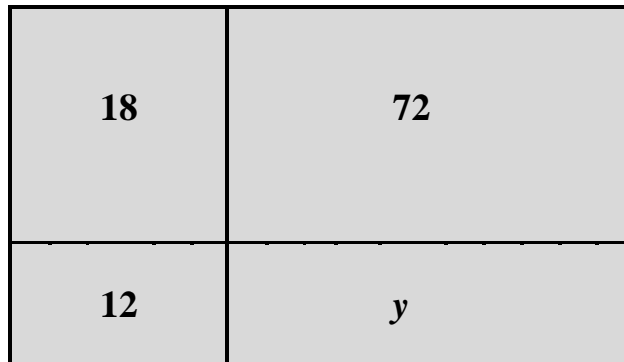
**Part A: Multiple Choice:** Each correct answer is worth 4 points. Each unanswered question is worth 2 points to a maximum of 3 unanswered questions.

1. A sequence of 12 whole numbers is formed by doubling the preceding number. If the tenth number in the sequence is 3072, then what is the median of the set of numbers?

- A. 192      B. 256      C. 288      D. 310      E. 144

2. A large rectangle is divided into 4 sub-rectangles with areas of 12, 18, 72, and  $y$  square units, as shown below: NOTE: Not drawn to scale!

What is the area, in square units, of the bottom-right *sub-rectangle*?



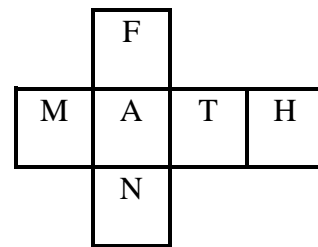
- A. 40      B. 48      C. 56      D. 62      E. 72

3. If  $n\%$  of 6 kilometer is 150 meter, then what is  $6\%$  of  $n$  kilometer?

- A. 0.15 km      B. 0.3 km      C. 3 km      D. 9 km      E. 15 km

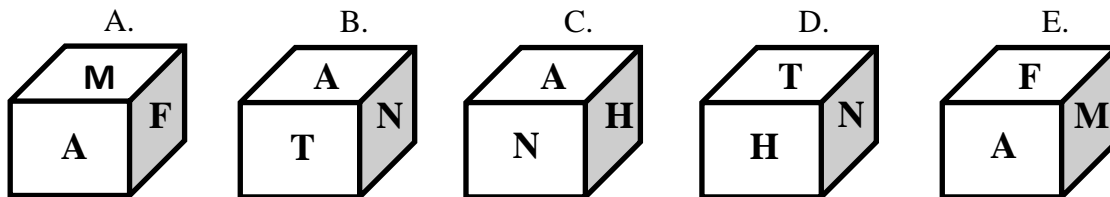
4. If 6 machines can assemble 9 toys in 4 minutes, then without stopping, how many machines would be needed to assemble 8100 toys in 1 full day?
- A. 6      B. 8      C. 12      D. 14      E. 15

5. The net of a cube is shown at the right.



One of the figures below shows the correct cube. Which is it?

(Please ignore the direction of the letters.)



6. The altitude of a triangle is half the side of a square. If the area of the triangle is three times that of the area of the square, then the ratio of the base of the triangle to the side of the square is \_\_\_\_\_.

- A. 2:1      B. 4:1      C. 6:1      D. 8:1      E. 12:1

7. If you skip-count backwards by 5s starting from 83 and not going below 0, then how many of those whole numbers will be multiples of 3?

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

**Part B: Short Answer:** Place the answer in the blank provided on the answer sheet. Each correct answer is worth 5 points.

8. A pizza consists of the following:

- 2 different toppings: fresh tomato, green peppers, ham, mushrooms, pepperoni, and pineapple.
- 1 of 2 types of tomato sauce: mild and tangy.
- 1 of 3 types of crust: thick, thin, and stuffed with cheese.

How many different pizzas are there?

9. Given:

- The lengths, in cm, of the sides of a right triangle are positive integers.
- One arm of the triangle is 9 cm shorter than the hypotenuse.
- The hypotenuse of the right triangle is equal to the radius of a circle.
- Rounded to the nearest whole number, the area of the circle is  $2642 \text{ cm}^2$ .
- The length and width of a rectangle are equal to the two arms of the right triangle.

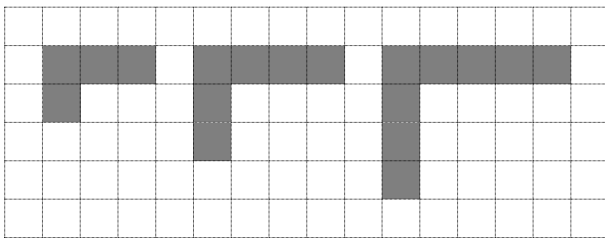
What is the perimeter, in cm, of the rectangle?

10. A flower garden is in the shape of a regular polygon. Each of its interior angles measures  $120^\circ$ . The perimeter of the garden is 48 m. What is the area, in  $\text{m}^2$ , of the garden, rounded to nearest integer?

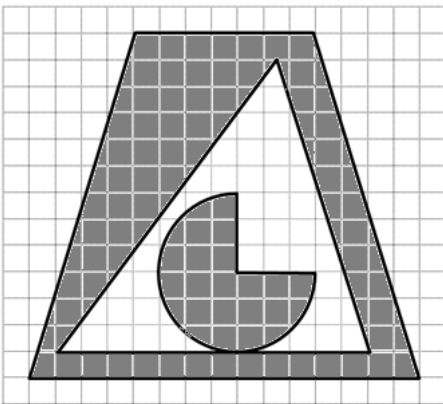
11. The vertices of a quadrilateral located on a coordinate plane are:  $A(-6,4)$ ,  $B(2,10)$ ,  $C(8,2)$ ,  $D(0,-4)$ .

What is the ordered pair that represents the location of point P such that P is equidistant to the vertices of the quadrilateral?

12. If the pattern of shapes shown below in the diagram continues, what is the perimeter of the 28<sup>th</sup> shape, in units of length?



13. From the diagram below, what is the area of the shaded region, rounded to the nearest square unit?



**Part C: Short Answer:** Place the answer in the blank provided on the answer sheet. Each correct answer is worth 7 points.

14. A 31-year old father has two children. All 3 people share the same birthday. The father's present age is equal to the sum of the children's ages in 8 years. What is the sum of the present ages of the 3 people?

15. Find a number consisting of three different digits such that if we write it after 523, we obtain a six-digit number which is divisible by each of 7, 8 and 9.
16. With the engine on, a steam boat takes five days to go down the river from A to B, but seven days to go up the river from B to A. Find the number of days the steam boat will take to drift down the river from A to B with the engine off. The speed of the steam boat in still water and the speed of the current of the river are both constant.
17. How many values of  $n$  such that  $1 \leq n \leq 2015$  and when we multiply  $n$  by  $(n + 2015)$  we get a power of 3?
18. Given:
- $a, b, c, d$  are four whole numbers,  
 $a + b + c = 12,$   
 $a + b + d = 14,$   
 $a + c + d = 16,$   
 $b + c + d$  is equal to one of the previous sum 12, 14 or 16.
- What are the values of these four numbers?
19. Find the largest three-digit number which is equal to the sum of the factorials of its digits. The factorial of a positive integer is the product of all the numbers from 1 up to and including that positive integer. For example,  $3!$  reads 3 factorial =  $3 \times 2 \times 1 = 6$ .