Student Name _____(**Print** First, Last) $\overline{100}$

2016 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.		

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

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 2016

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. On a contest with 30 questions:

   - Each correct answer is awarded 6 points;
   - Each incorrectly answered question is penalized 2 points;
   - Each unanswered question is penalized 1 point.

   Abby answered 70% of the questions. The ratio of correct answers to incorrect answers to unanswered question is 5:2:3. How many points did she receive?

   A. 45   B.   126   C.   63   D. 81   E.   69

2. Working at a constant rate, if Ben can cut a metal pipe into 5 pieces in 30 minutes, how many minutes would it take to cut a similar pipe into 15 pieces?

   A.   210   B.   170   C.   105   D. 90   E.   65

3. Each of the first 6 prime numbers is written on the 6 different faces of a red cube. Each of the first 6 composite numbers is written on the 6 different faces of a blue cube. The two cubes are tossed/rolled once. What is the probability that the sum of the numbers rolled is 13?

   A. $\dfrac{1}{18}$ B. $\dfrac{1}{12}$ C. $\dfrac{1}{9}$ D. $\dfrac{1}{6}$ E. $\dfrac{1}{3}$

4. The distance from home to school is a total of 4 blocks. Jane must stay on the pathways and walk either east or north, as shown in the diagram.

   How many ways are there in total for Jane to walk from home to school and back again, if she must return using a different path?
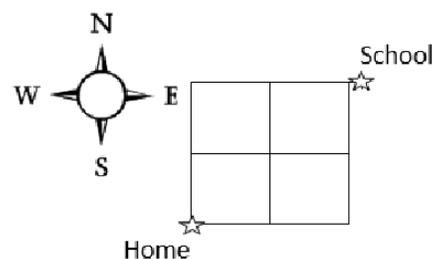
   A. 5   B.   6   C.   11   D. 30   E.   36

5. Two rectangles with integer dimensions each have an area of 216 cm². The length of the first rectangle is 30 cm greater than that of the second rectangle. However, the width of the first rectangle is 5 cm less than that of the second rectangle. What is the difference in the perimeters, in centimetres, of the two rectangles?

   A. 25   B. 35   C. 50   D. 60   E. 70

6. A family agreed to share the total cost of buying a $2268 (including GST) gaming computer.

   - Dad paid for $\frac{1}{6}$ of the total cost.
   - Then the oldest daughter, Kylee, paid for $\frac{1}{5}$ of the remaining cost.
   - Then the son, Shawn, paid for $\frac{1}{4}$ of the remaining cost.
   - Then the middle daughter, Erin, paid for $\frac{1}{3}$ of the remaining cost.
   - Then the youngest daughter, Kassidy, paid for $\frac{1}{2}$ of the remaining cost.

   If Mom paid for the remaining amount, then <u>approximately</u> how much more did the children pay compared to the amount paid by the parents?

   A. $300   B. $450   C. $600   D. $750   E. $900

7. The net of the square pyramid shown at the right would consist of 4 congruent isosceles triangles (each with sides measuring 30 cm, 30 cm, 20 cm) and one square base.

   What is the total surface area, to the nearest whole cm², of the pyramid?

   30 cm

   20 cm
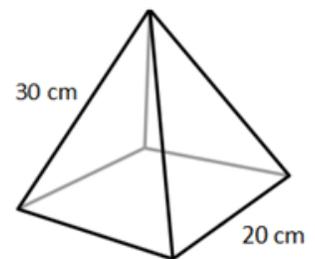
   A. 1531   B. 1585   C. 1600   D. 1665   E. 2800

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

8. Two different digits from 1 to 9 are chosen randomly to form a 2-digit number. By reversing the order of the digits, a second 2-digit number is formed. What is the probability that the sum of these two numbers will be a multiple of the sum of the digits?

9. How many positive proper fractions in lowest terms have a denominator of 90?

10. A circle is inscribed in a right triangle as shown. What is the radius of this circle?
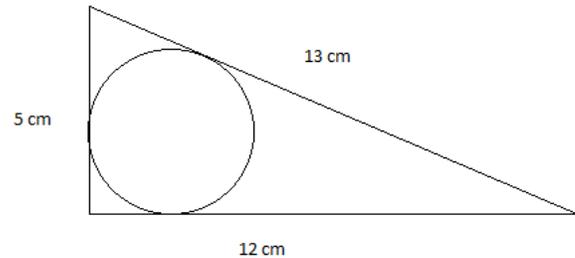
11. A carpenter stores his nails in a metal box in the shape of a rectangular prism with a square base that measures 5 cm by 5 cm by 9 cm. To the nearest **tenths** of a cm, what is the length of the longest nail that can be stored inside the box?

12. What is the difference between the sum of all multiples of 3 less than 50 and the sum of all multiples of 4 less than 50?

13. How many 9s are in the product 999 999 999 x 20 162 016?

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

14. Three people are coloring the same piece of $8\frac{1}{2}$ by 14 paper.

    Abby starts on the left side and painted $\frac{1}{2}$ of the paper red.

    Ben starts on the right side and painted $\frac{3}{4}$ of the entire paper green.

    Cathy starts in the middle and painted $\frac{1}{3}$ of the entire paper, evenly on either side of the centre line, using blue color.

    What fraction of the paper has all three color painted on it?

15. $\overline{AB}$ is a diameter of the base of a cylinder and T is point on the opposite base of the cylinder directly above B. M is the midpoint of $\overline{TB}$. If $\overline{MB} = 8$ and $\overline{AB} = \frac{30}{\pi}$, what is the shortest distance between A and M along the curved surface of the cylinder?

16. The fraction $\frac{1}{7}$,when expressed as a repeating decimal, is equal to 0.142857142857 ...

    Note that 1 is in the tenths place, 4 is in the hundredths place and so on. Let m be the 20th digit to the right of the decimal point and n be the 104th digit to the right of the decimal point, find n – m.

17. There were 11 baskets of Easter eggs, containing 14, 15, 19, 20, 22, 23, 24, 26, 27, 34 and 40 eggs respectively. John and Mary took all but one basket, each getting several baskets. John had twice as many eggs as Mary at this point. Mary then gave one of her baskets to John and now John had three times as many eggs as Mary. Which basket, indicated by the number of eggs above, did Mary give to John?

18. How many copies of the digit 0 are there among the digits of the first 2016 positive integers?

19. E and F are the respective midpoints of the sides $\overline{AB}$ and $\overline{BC}$ of a rectangle ABCD of area 2016. G is the point of intersection of $\overline{AF}$ and $\overline{CE}$. What is the area of the quadrilateral AGCD?