

ONTARIO MATHEMATICS OLYMPIAD

SAMPLE QUESTION #7

NOTE: This was an event for individuals by themselves.

INDIVIDUAL

Answer as many questions as possible in the time given. Make sure to write down your thought process and all necessary work..

NO calculators allowed.

1. What number am I? First, 8 is added to me, then I am multiplied by 6. Then 40 is subtracted from me. Finally, I am divided by 10. The result is 11. What number am I?
2. Which numbers have a sum of 123 and a difference of 45?
3. On a test consisting of 30 questions. Anita had 50% more right answers than wrong answers. Each answer was either right or wrong.
 - (a) How many answers did Anita have right?
 - (b) What is the ratio of right answers to wrong answers?
4. A person cashes a cheque at the bank. By mistake, the teller pays the number of cents as dollars and the number of dollars as cents. The person spent \$3.50 before realizing the mistake, then on counting the money finds there is exactly double the amount of the cheque. For what amount was the cheque made out?
5. A local restaurant sells chicken nuggets in boxes of 6, 9 and 20. Determine whether the following amounts of nuggets can be purchased.
Number of desired nuggets: 15, 99, 19, 48, 76

6. Old Faithful, a geyser in Yellowstone National Park, erupts in regular intervals. The park rangers use this rule to find the number of minutes to the next eruption: the length of the eruption times 4 plus 30 minutes.

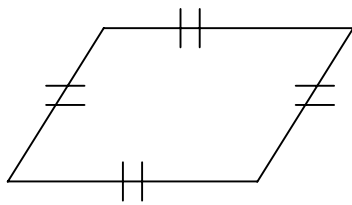
Give the time for the next 3 eruptions in the following chart:

<u>TIME</u>	<u>LENGTH OF ERUPTION</u>	<u>NEXT PREDICTED TIME</u>
9:00 am	7 minutes	$4 \times 7 + 30 = 58$ 9:58 am
9:58 am	2 minutes 30 seconds	
	6 minutes 15 seconds	
	3 minutes 20 seconds	

7. Between noon and midnight, but not counting these times, how often will the minute hand and hour hand of a clock overlap?
8. There are 9 red marbles and 10 green marbles in a jar. Chantal plays a strange game. She removes two marbles at a time, with the following rules:
if the marbles are both green, she puts one white back.
if there is one marble of each colour, she puts one green marble back.
if the marbles are both red, she puts one green marble back.
At the end, there will be one marble left in the jar. Which colour must it be?
9. As you are traveling to the store you unfortunately lose $\frac{1}{3}$ of your money. Then, on the bus you lose $\frac{2}{5}$ of what you had left. When you arrive at the store you have \$1.50. How much money did you originally have?
10. What is the second largest number in the set? $\{0.3, 0.9, 0.18, 0.27, .081\}$
11. Find the value of $\frac{0.2}{0.4}$.
12. If $x = 0.3$, find the value of $\frac{1}{x}$?
13. What is the value of $12 + \frac{6}{3} \times 2 - 1$?
14. What is 0.75% of 264?

15. If 10% of a number is equal to 25% of 16, what is the number?
16. Find the average of 6.2 and 0.62
17. What is the number halfway between $\frac{1}{8}$ and $\frac{7}{12}$?
18. The average of -3 and a second number is 2. What is the second number?
19. A railway engine is 12 metres long. To build a model railway to $\frac{1}{100}$ scale, the length of model engine, in cm, should be ...
20. Find the area of the circle with radius, $\frac{1}{\pi}$
21. A ladder 5 metres in length is leaning against a wall 12 metres high. The foot of the ladder is 3 metres from the base of the wall. What is the distance, in metres, from the top of the ladder to the top of the wall?

22.



A parallelogram has four equal sides and a perimeter of 14 units. If the distance between the parallel sides is 5 units, find the area of the parallelogram.

23. Find the sum of the first six multiples of 8, starting with 8.
24. Which of the following number(s) would be counted, if you started at 777 and counted backwards by 7's:
 (a) 45 (b) 44 (c) 43 (d) 42 (e) 41
25. What is the number of pairs of parallel faces on a cube?
26. What is the sum of the numbers on the opposite faces of a die (one of a pair of dice)?