



National Qualifying Examination – Sample Exam (Middle School Division)

Instructions – Mark the letter of the correct answer on the answer sheet or leave it blank. Correct answers are worth 2 points. Incorrect answers and questions left blank are worth 0 points.

Please note – This sample exam has 15 questions, but the qualifying exam given at regional competitions will have 35 questions.

1. What is the volume of a rectangular prism if $l = 7$, $w = 5$, $h = 4$?
 - A. 120
 - B. 140
 - C. 160
 - D. 200
2. What is $\sqrt{144}$?
 - A. 8
 - B. 9
 - C. 11
 - D. 12
3. What is the greatest common factor (GCF) of 64 and 100?
 - A. 1
 - B. 4
 - C. 10
 - D. 16
4. A cube has a side length of 10 cm. What is its volume?
 - A. 100 cm^3
 - B. 500 cm^3
 - C. $1,000 \text{ cm}^3$
 - D. $10,000 \text{ cm}^3$
5. Which of these is true?
 - A. $7 > 9$
 - B. $10 < 8$
 - C. $5 \geq 6$
 - D. $12 \geq 12$
6. Which property states that $7 + (3 + 2) = (7 + 3) + 2$?
 - A. Commutative
 - B. Associative
 - C. Distributive
 - D. Identity
7. Simplify: $4x + 3x - 5$.
 - A. $7x + 5$
 - B. $12x - 5$
 - C. $7x - 5$
 - D. $12x + 5$
8. The additive identity is which of the following?
 - A. -1
 - B. 0
 - C. 1
 - D. 10
9. Which angle is greater than a right angle but less than a straight angle?
 - A. Acute
 - B. Obtuse
 - C. Reflex
 - D. Zero
10. What is the slope of a horizontal line?
 - A. Undefined
 - B. 1
 - C. 0
 - D. Positive
11. Which of the following is equivalent to $(x + 3)(x + 2)$?
 - A. $x^2 + 2x + 3$
 - B. $x^2 + 6x + 5$
 - C. $x^2 + 5x + 6$
 - D. $x^2 + 3x + 2$
12. Which of these is closest to the area of a circle with radius 6?
 - A. 19
 - B. 89
 - C. 113
 - D. 230
13. A recipe calls for $2 \frac{1}{2}$ cups of flour. If you double the recipe, how much flour is needed?
 - A. 5 cups
 - B. $4 \frac{1}{2}$ cups
 - C. 4 cups
 - D. $5 \frac{1}{2}$ cups
14. If $a = 4$ and $b = 6$, what is $ab - a$?
 - A. 14
 - B. 16
 - C. 20
 - D. 24
15. A bag has 5 red marbles, 3 blue marbles, and 2 green marbles. If one marble is picked at random, what is the probability of picking a red marble?
 - A. $\frac{1}{5}$
 - B. $\frac{1}{2}$
 - C. $\frac{1}{3}$
 - D. $\frac{2}{5}$