Part A: Multiple Choice  Indicate the correct answer on the answer key provided.

1. Simplify: 3x - 7 + 5x + 8
   A) -5x + 15       B) 2x + 1       C) 8x - 15       D) 8x + 1

2. Simplify: m + m + 3m + 4
   A) 3m + 4          B) 5m - 4          C) 5m + 4          D) 2m + 3m + 4

3. Evaluate: (-2) \times (5) \times (-6)
   A) -30          B) -60          C) 30          D) 60

4. Evaluate: \left( -\frac{3}{4} \right) \div \left( \frac{1}{4} \right)
   A) -\frac{3}{4}       B) -3       C) \frac{12}{4}       D) -\frac{3}{16}

5. Evaluate: \frac{2}{3} - \frac{1}{6}
   A) \frac{1}{2}       B) -\frac{1}{2}       C) -\frac{1}{3}       D) \frac{1}{6}

6. Evaluate: \frac{2}{3} + \frac{7}{4} \times -\frac{8}{14}
   A) -\frac{1}{3}       B) -\frac{54}{56}       C) -\frac{53}{54}       D) \frac{1}{3}

7. Evaluate: 4^3 - 2^3
   A) 8          B) -8          C) 72          D) 56

8. Determine the value of x in the proportion: 3 : 5 = x : 15
   A) 5          B) 9          C) 6          D) 3

9. Determine the value of x that satisfies the equation: 4x = 20
   A) 5          B) 4          C) 6          D) 20

10. Evaluate: 3^2 - 4 \times 2
    A) -1          B) 4          C) -2          D) 1
GRADE 9 Diagnostic

Name: ______________________

11. Evaluate: \( 3 + 12 ÷ 4 \)

A) 7  B) 5  C) 6  D) 12

12. Last year there were 1940 students at Fletcher's Meadow Secondary School. This year there are 15% less students than last year. How many students are at Fletcher's Meadow this year?

A) 2231  B) 1649  C) 1925  D) 1807

13. The value of \(-32\) is

A) 9  B) 6  C) \(-9\)  D) \(-6\)

14. Which of these is equal to \(y^3\)?

A) \(y + y + y\)  B) \(y + 2y\)  C) \((y)(2y)\)  D) \((y)(y)(y)\)

15. The table represents a linear relationship between \(x\) and \(y\). What is the missing number in the table?

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
<td>7</td>
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</tbody>
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A) 2  B) 4  C) 6  D) 8

16. Susan combines 5 litres of red paint, 2 litres of blue paint and 2 litres of yellow paint. What is the ratio of red paint to total paint?

A) 5:2  B) 9:4  C) 5:4  D) 5:9

17. The temperature outside in \(-5°C\) on Monday. Overnight it drops by \(3°C\). Between 9am and noon the next day it rises \(2°C\). What is the temperature on Tuesday at noon?

A) \(-6°C\)  B) \(0°C\)  C) \(-4°C\)  D) \(-10°C\)

18. The opposite angle theorem (OAT) states that:

A) Adjacent Angles are equal  B) The sum of opposite angles is \(180°\)
C) The sum of opposite angles is \(360°\)  D) Opposite angles are equal

19. Find the value of the expression \(-3k - 4k^2 + 4h - 7\) if \(k = -3\) and \(h = 4\)

A) 18  B) \(-18\)  C) 54  D) 42

20. Evaluate \(5 - 3(2-6)3\)

A) 128  B) \(-187\)  C) \(-128\)  D) 197
### Part A: Multiple Choice Answers (20 MARKS)

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

### Part B: Full Solution (24 MARKS)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>21. Two groups of tourists each have 60 people. 75% of the first group and 32 people from the second group board a bus to travel to a museum. How many more people from the first group boarded the bus?</td>
<td>(4)</td>
</tr>
<tr>
<td>22. Find the volume of a cylinder with height 25cm and radius 5cm.</td>
<td>(4)</td>
</tr>
</tbody>
</table>
23. A rectangle’s length is 4 times bigger than its width. If the width of the rectangle is 3.5cm. What is the **perimeter** and **area** of the rectangle? (4)

24. You want to purchase a new Computer. The computer costs $449 plus $129 for software. What is the total cost of your purchase including 13% HST? (4)

25. Justin has 4 more marbles than Lee, and Cindy has 3 times as many marbles as Justin. If Lee has n marbles, write an expression that could be used to determine how many marbles Cindy has. (4)