Unit 5 - Analytic Geometry - REVIEW - Even MORE practice questions

1. The slope of the line that passes through points \((5, 3)\) and \((-1, -4)\) is
   A. \(\frac{3}{2}\)  
   B. \(\frac{7}{6}\)  
   C. \(\frac{6}{7}\)  
   D. \(\frac{2}{3}\)

2. What is the slope of the given line?
   A. \(\frac{3}{2}\)  
   B. \(\frac{2}{3}\)  
   C. \(-\frac{3}{2}\)  
   D. \(-\frac{2}{3}\)

3. A line is plotted on a coordinate plane such that when its \(y\)-coordinate increases by 5, its \(x\)-coordinate decreases by 3. What is the slope of this line?
   Show your work.

4. Which of the following equations represents a line with a slope of \(-\frac{1}{2}\) and that passes through point \((2, -3)\)?
   A. \(2x - 3y = \frac{1}{2}\)
   B. \(y = -\frac{1}{2}x - 3\)
   C. \(x + 2y - 4 = 0\)
   D. \(x + 2y + 4 = 0\)

5. Which of the following graphs could be the graph of a linear relation that has a slope of \(-1\)?
   A. 
   B. 
   C. 
   D. 

6. What is the slope of this line?
   Show your work.

7. The constant rate of change of the fruit fly population during this period is
   A. 7.6 flies/day  
   B. 8.6 flies/day  
   C. 9.6 flies/day  
   D. 10.6 flies/day

A glass box in a laboratory contains 150 fruit flies. After 25 days, the population of the fruit flies increases to 340.
8. What is the rate of change of this graph?
   A. $-\frac{1}{2}$  
   B. 0  
   C. $\frac{1}{2}$  
   D. 2

9. What is the plant's rate of growth?
   A. $-3$ cm/week  
   B. $-\frac{1}{3}$ cm/week  
   C. $\frac{1}{3}$ cm/week  
   D. 3 cm/week

Laura made this chart to show how much her plant grew each week.

<table>
<thead>
<tr>
<th>Week</th>
<th>Plant Growth (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

10. Demonstrate the constant rate of change using the equation of the line in slope y-intercept form, first differences, and a graph.

11. Which of the following lines is perpendicular to the line given by the equation $4y = 5x$?
   A. $12x + 15y = 15$  
   B. $10x - 8y = -3$  
   C. $8x + 4y = 5$  
   D. $2x - 6y = -7$

12. Which of the following pairs of slopes represents two parallel lines?
   A. $-\frac{1}{2}$ and $\frac{1}{2}$  
   B. $\frac{2}{5}$ and $\frac{10}{25}$  
   C. $\frac{2}{1}$ and $\frac{1}{2}$  
   D. $-\frac{2}{5}$ and $\frac{25}{10}$

13. What is the equation of the horizontal line passing through point (3, 1)?
    Show your work.

14. Which of the following equations is linear?
    A. $x^2 + xy = 2$  
    B. $2x = y - 4$  
    C. $xy = y + 2$  
    D. $x^2 - y = 3$

15. It is true to state that linear relations have a degree of
    A. one  
    B. two  
    C. three  
    D. four

The cost of hiring a taxi is $3.00 plus $1.25 for every kilometre travelled.
16. Which of the following equations represents the plotted line?
   A. $x = 3$
   B. $y = x^2$
   C. $x^3 + 1 = y$
   D. $5y + 4x = 20$

17. Which of the following linear equations is correctly written in slope y-intercept form?
   A. $x + y - 2 = 0$
   B. $y = 2x^2 + 1$
   C. $y = 3x + \frac{1}{3}$
   D. $x = \frac{y-1}{2}$

18. What is the equation of the line in standard form?
   A. $3x - 2y - 6 = 0$
   B. $3x - 2y + 6 = 0$
   C. $3x + 2y - 6 = 0$
   D. $3x + 2y + 6 = 0$

19. The equation of this line written in standard form is
   A. $3x + y + 2 = 0$
   B. $-3x - y - 2 = 0$
   C. $y = 3x - 2$
   D. $y = -3x - 2$

   The slope of a line is $-3$ and the y-intercept is $-2$.

20. What are the equations of Line 1 and Line 2, respectively?

21. The equation of the line $4y - 2x - 6 = 0$ can be expressed in slope y-intercept form as
   A. $y = \frac{x - \frac{3}{2}}{2}$
   B. $y = \frac{x + \frac{3}{2}}{2}$
   C. $y = -\frac{x}{2} - \frac{3}{2}$
   D. $y = -\frac{x}{2} + \frac{3}{2}$

22. What is the standard form of the equation $y = \frac{3}{4}x + \frac{2}{3}$?
   A. $9x - y + 8 = 0$
   B. $36x - 12y + 24 = 0$
   C. $9x - 12y + 8 = 0$
   D. $9x + 12y - 8 = 0$
23. What is the equation of the line \( x + 3y = 7 \) expressed in slope-intercept form? Show your work.

24. Which graph represents the line that is parallel to \( 2x + y = 3 \) and passes through point \((1, 3)\)?

27. A line is parallel to the line \( y = 5x + 3 \) and has a \( y \)-intercept of \(-2\). The equation of the line is
   A. \( y = 5x - 2 \)  
   B. \( y = 5x + 2 \)  
   C. \( y = 9x - 5 \)  
   D. \( y = 9x + 5 \)

28. Which of the following equations represents a line that is perpendicular to the line \( y = \frac{1}{3}x - 6 \)?
   A. \( x + 3y = 12 \)  
   B. \( 2x + 5y = 10 \)  
   C. \( 3x + 6y = 8 \)  
   D. \( 6x + 2y = 9 \)

29. The equation of the line with a slope of \( \frac{3}{4} \) and a \( y \)-intercept of \( \frac{1}{2} \) is
   A. \( 3x - 4y + 2 = 0 \)  
   B. \( 3x + 4y + 2 = 0 \)  
   C. \( 6x - 8y + 16 = 0 \)  
   D. \( 6x - 8y - 16 = 0 \)

30. What is the equation of the line that passes through points \((4, 5)\) and \((3, 2)\)? Show your work.

31. A library charges 50 cents for the first day that a book is overdue and 25 cents for each day after that. Which of the following equations relates the total cost to the number of days the book is overdue?
   A. \( C = n + 25 \)  
   B. \( C = 25n + 50n \)  
   C. \( C = 50 \times 25n \)  
   D. \( C = 50 + 25n \)
32. If \( I \) represents the income of the carpenter and \( n \) represents the number of hours worked, then a linear equation that could show the relationship between the two variables is

\[
\begin{align*}
A. \; I &= 100n \\
B. \; I &= 20n \\
C. \; I &= n + 100 \\
D. \; I &= n + 20
\end{align*}
\]

33. What does the \( P \)-intercept represent?

\[\text{A. Cost of 25 bags of popcorn} \]

\[\text{B. Number of bags of popcorn that must be sold to recover the start-up cost of$25.00} \]

\[\text{C. Start-up cost of$25.00} \]

\[\text{D. Profit of$25.00} \]

A school club sells bags of popcorn for$1.00 each as a fundraiser. The equation of the relation is \( P = B - 25 \), where \( P \) represents the profit in dollars and \( B \) represents the number of bags sold.

34. Write the equation of the given relation in slope \( y \)-intercept form and describe the meaning of the slope and \( y \)-intercept for this linear relation.

Show your work.

35. If \( p \) is restricted to whole numbers of 20 or less because of the size of the track, then the maximum number of people who can watch the race is

\[\begin{align*}
A. \; 20 & \quad B. \; 95 \\
C. \; 215 & \quad D. \; 760
\end{align*}\]

In the relation \( N = 15 + 4p \), \( N \) represents the number of people who watch a car race, and \( p \) represents the number of participants in the race.

36. A 21 \( \text{cm} \) candle burns down 1.4 \( \text{cm} \) every hour. For how long can the candle burn?

\[\begin{align*}
A. \; 10 \text{ hours} & \quad B. \; 15 \text{ hours} \\
C. \; 21 \text{ hours} & \quad D. \; 42 \text{ hours}
\end{align*}\]

37. A satellite approximately 120 \( \text{km} \) from Earth sends a signal to Earth at the speed of light. Given that the speed of light is approximately \( 3 \times 10^8 \text{ m/s} \), the approximate value of the time required for the signal to travel from the satellite to Earth is

\[\begin{align*}
A. \; 0.00004 \text{ s} & \quad B. \; 0.0004 \text{ s} \\
C. \; 0.004 \text{ s} & \quad D. \; 0.04 \text{ s}
\end{align*}\]

38. If Akhil correctly completes his solution, he will determine that the solution is

\[\begin{align*}
A. \; (3, -4) & \quad B. \; (3, -5) \\
C. \; (2, -4) & \quad D. \; (2, -5)
\end{align*}\]

Akhil is asked to solve a system of linear equations. He uses a graphical approach for solving. Akhil’s correct partial solution is below.
ANSWERS

1. B
2. D
3. slope is \(-\frac{5}{3}\)
4. D
5. A
6. slope is 1
7. A
8. A
9. D
10. \(C = 1.25k + 3\)
11. A
12. B
13. \(y = 1\)
14. B
15. A
16. D
17. C
18. D
19. A
20. Vertical \(x = -3\), horizontal \(y = -4\)
21. B
22. C
23. \(y = -\frac{1}{3}x + 7/3\)
24. C
25. B
26. A
27. A
28. D
29. A
30. \(y = 3x - 7\)
31. D
32. B
33. C
34. \(C = 67h + 100\)
35. B
36. B
37. D
38. D