LINEAR LIFE 1

Multiple Choice

Identify the choice that best completes the statement or answers the question.

Assume that this graph shows air pressure at different altitudes. Use the graph to answer the following question(s).

1. When a mountain climber reaches an altitude of 1000 m, what is the approximate air pressure?
   a. 78 kPa   c. 88 kPa
   b. 82 kPa   d. 92 kPa

2. What is the approximate air pressure at an altitude of 4000 m?
   a. 35 kPa   c. 43 kPa
   b. 40 kPa   d. 50 kPa
Use the graphs to answer the following question(s).

3. Who walked at a faster rate?
   a. Bill  
   b. John  
   c. The graphs do not show who was faster.  
   d. They walked at the same rate.
Use the figures to answer the following question(s).

4. Which table of values describes the pattern?

   a.  
<table>
<thead>
<tr>
<th>Figure Number</th>
<th>Number of Dots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

   b.  
<table>
<thead>
<tr>
<th>Figure Number</th>
<th>Number of Dots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>

   c.  
<table>
<thead>
<tr>
<th>Figure Number</th>
<th>Number of Dots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
</tr>
</tbody>
</table>

   d.  
<table>
<thead>
<tr>
<th>Figure Number</th>
<th>Number of Dots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

5. Which figure number will have 42 dots?
   a. 28  
   b. 35  
   c. 37  
   d. 61

6. Which statement describes the number of dots in each figure?
   a. The number of dots is four more than two times the figure number.
   b. The number of dots is seven more than the figure number.
   c. The number of dots is three more than four times the figure number.
   d. The number of dots is two more than fives times the figure number.
7. Which graph represents the following table of values?

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

a. ![Graph A]

b. ![Graph B]

c. ![Graph C]

d. ![Graph D]
8. Which graph represents the following table of values?

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

a. ![Graph A]

b. ![Graph B]

c. ![Graph C]

d. ![Graph D]
9. Which linear equation is represented by the following graph?

- a. $y = -2x + 7$
- b. $y = -2x + 3.5$
- c. $y = 7x - 2$
- d. $y = 2x - 7$

Each line segment is 3 units long. Use the figures to answer the following question(s).

10. Describe the pattern in the relationship between the figure number and the figure length.

- a. The length of the figure is 2 more than the figure number.
- b. The length of the figure is 4 more than the figure number.
- c. The length of the figure is 3 times the figure number.
- d. The length of the figure is 6 times the figure number.
11. The height (in cm) of a stack of flowerpots can be modelled with the linear equation \( h = 9 + 3n \). Which graph represents this situation?

a.  

b.  

c.  

d.  

Matching

Match the correct term to each of the following descriptions. A term may be used more than once or not at all.

a.  vertical line  

b.  table of values  

c.  horizontal line  

d.  discrete data  

e.  constant  

f.  continuous data  

12. graph of the equation \( y = 7 \)

13. data that can be graphed as points only

14. numerical term in an equation that is added or subtracted
Short Answer

15. Eoz is walking near a motion detector.
   a) How far was Eoz from the sensor when she began walking?
   b) Was she walking toward or away from the motion sensor at the time?
   c) How long did it take her to reach the motion sensor?

Problem

16. Elac and Enaz are tiling a floor. All tiles are square. The figure below shows how many tiles Elac and Enaz put in place, by the hour.

   a) Complete the table of values.

<table>
<thead>
<tr>
<th>Hours Worked</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Light Grey Tiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Dark Grey Tiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   b) How many light grey tiles have been laid in five h?
   c) If there are 60 dark grey tiles to be laid, how long did it take to complete the work?
17. The distance, $d$, that a car travels in a given amount of time, $t$, is shown in the table.

<table>
<thead>
<tr>
<th>Time, $t$ (h)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance, $d$ (km)</td>
<td>90</td>
<td>180</td>
<td>270</td>
<td>360</td>
<td>450</td>
</tr>
</tbody>
</table>

a) Describe the pattern in the table.
b) Write a linear equation to determine the distance travelled, $d$, in a certain amount of time, in hours, $t$.
c) How far will the car travel in 10 h?
d) How long will it take to travel 1620 km?

18. New Horizons is looking into ordering new school jackets. There is a flat fee of $350 for the crest design plus $75 per jacket.

a) Create a table of values showing the cost to produce 0, 100, 200, 300, and 400 jackets.
b) What is an equation that can be used to predict the cost, $c$, of producing any number of jackets, $n$?
c) What is the cost of producing 500 jackets?
d) What is cost, per jacket, if 750 jackets are ordered? Round your answer to the nearest cent.
19. The graph shows the distance, $d$, a car travels over a period of time, $t$.

a) What is the linear equation for the relationship between distance and time?

b) How fast is the car travelling?

c) Describe two ways that you can determine how far the car has travelled in 100 min.

d) What is the distance travelled in 100 min?
20. Niltiac’s grandmother gave her $80 when she started jr. high school. Niltiac decided to add $10 to her savings each week to save money for a new computer.
   a) What is a linear equation that represents the amount of time, in weeks, \( t \), and the amount of money, in dollars, \( m \), Niltiac has saved?
   b) Graph the linear relation from 0 to 36 weeks.

e) Describe two ways to determine how long will it take Niltiac to save enough money to buy a laptop computer that costs $600?
   d) How long will it take to save enough money to purchase the computer?