Common Core Math 8
Review

Identify the equation of the function represented in the graph

A/ $y=2x$
B/ $y=3x$
C/ $y=-2x$
D/ $y=x+6$
Identify the equation of the function represented in the graph

\[ y = x - 3 \]  
\[ y = x + 1 \]  
\[ y = 3 - 3x \]  
\[ y = \frac{3}{x} \]

Sarah decided to do some research on how your health is affected by fast food. She interviewed 20 people that consumed fast food different amounts throughout the week. She discovered that the less fast food consumed, the less people weighed. Sketch the graph that represents this.

The graph would have y-axis for weight
x-axis for trips to Fast Food

x-axis would be 7, 6, 5, 4, 3, 1
growing down with a scatter plot gin down.
Identify the equation of the function represented in the graph:

**A/** $y = x - 4$
**B/** $y = x$
**C/** $y = 7$
**D/** $y = \frac{1}{2}x - 6$

Write the slope-intercept form of the equation for a line passing through the point (-2, 5) and having a slope of -1:

**A/** $y = -x + 3$
**B/** $y = x - 3$
**C/** $y = \frac{4x}{5} + 2$
**D/** $y = \frac{2x}{3} - 4$
Write the slope-intercept form of the equation for a line passing through the point (-4, 4) and having a slope of \( \frac{1}{2} \).

\[
A/ \ y = \frac{1}{2}x + 3 \\
B/ \ y = 2x - 6 \\
C/ \ y = \frac{1}{2}x + 6 \\
D/ \ y = -\frac{1}{2}x + 7
\]

The football team wants to mow lawns in the summer to raise money for their season. The equipment costs some money up front which was donated by local businesses. They charged a fixed rate for each lawn they mow. What does the y-intercept represent?

\[
A/ \text{The amount of profit at the start of the summer} \\
B/ \text{The # of lawns they mowed} \\
C/ \text{The # of football players} \\
D/ \text{The # of customers that denied them}
\]
The graph below shows the expected growth of subscribers to Netflix in the first five years that it was introduced. Which statement is true?

A. The number of subscribers increases by about 20 million a year
B. The number of subscribers increases by about 60 million a year
C. To find the rate of increase, multiply the # of subscribers by the time.
D. To find the rate of increase, divide the # of years by subscribers.

The snow from the recent storm measured to be 6 inches. After 4 hours, there are 4 inches left because it started to melt. Assume the snow melts at the same rate.

* Write a linear function to model the amount of snow over time.

* Identify the slope and the y-intercept in terms of the situation.

\[(0, 6) \text{ (4, 4)}\]

\[\text{Slope} = \frac{1}{2}\]

\[y = \frac{1}{2}x + 6\]
The graph shows Sarah's quiz scores for the first five weeks after she got a tutor. Examine the graph and determine which statement is true.

A/ Sally had a 10% increase each week  
B/ To find Sally's rate of increase, divide the total test scores by the total # of weeks with the tutor.  
C/ Sally had about a 5% increase each week  
D/ Sally's tutor did not help her.

A line passes through (0,10) and has a slope of -10. Write the equation for the line.

\[ y = x - 10 \]
Write the equation of the relationship shown in the table.

\[ y = \frac{-4}{5} x + 2 \]

Is this a function?

Yes - only one \( y \) for each \( x \)
Write the slope-intercept form of the equation for a line passing through the point (8,6) and having a slope of $\frac{1}{4}$.

\[
\begin{array}{|c|c|}
\hline
A/ \ y = 4x + 2 & B/ \ y = -4x \\
\hline
C/ \ y = \frac{-1}{4}x + 4 & D/ \ y = \frac{1}{4}x + 4 \\
\hline
\end{array}
\]

How can you tell if a function is linear?

- No exponents
- $y = mx + b$
Deon borrowed $150 from his sister and is paying her back $20 at a time. Sketch what the graph would look like for this situation.

Steadily sloping in a negative direction starting at $150 on the y-axis

Identify the equation of the function represented in the graph

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A/ ( y = x )</td>
<td>B/ ( y = x - 9 )</td>
</tr>
<tr>
<td>C/ ( y = x - 5 )</td>
<td>D/ ( y = 2x + 3 )</td>
</tr>
</tbody>
</table>
Is this a function?

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>-3</td>
<td>9</td>
</tr>
</tbody>
</table>

Yes - one x for every y.

*It doesn't matter if there are two ys.

Choose which graph is linear.

1) Choose which of the graphs is linear.

a  

b  

c
Carrie has a lemonade stand. She pays for her supplies and then charges a fixed rate per glass of lemonade. The graph shows the linear function that goes with it. What does the y-intercept represent?

A line passes through the origin and (5, 25). Write the equation for the line.

\[ y = 5x \]
How do you find the rate of change? What is the formula?

Find slope!

\[ \frac{y_2 - y_1}{x_2 - x_1} \]

Josh and Brian both use their cell phones constantly and start each month with the amount of minutes from the previous month. The equation compares the number of minutes used \((x)\) to the cost of the phone bill \(f(x)\). Find and compare the y-intercepts for the models and interpret their real-world meanings.

**Josh’s Phone**

\[ f(x) = 2x + 25 \]

**Brian’s Phone**

<table>
<thead>
<tr>
<th>Minutes Used</th>
<th></th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of bill</td>
<td>15</td>
<td>60</td>
</tr>
</tbody>
</table>

Equation for Brian would be \( y = x + 15 \)

Can conclude Josh has more minutes left because he pays twice as much per minute compared to Brian.
SOLVE

$$4(f + 3) + 5 = 17 + 4f$$

All numbers

A yacht club charges a $100 membership fee plus monthly fees of $15.
* Find the rate of change.
* Write the linear equation that goes with it.

Find slope

$$\frac{y_2 - y_1}{x_2 - x_1}$$

$$y = x + 100$$
What is a linear function?

Only one X for each Y.
No two y values can be the same!

Jayden borrowed $10,000 from his grandmother to open a coffee shop. Each week he makes about $1000 in profit. Sketch the graph that represents this situation.

*The graph would be steadily sloping in a positive direction*

Starting at $-10,000 on the y-axis
Which equation is NOT linear?

A/ \( y = 3x^2 \)
B/ \( y = 4x + 7 \)
C/ \( y = x \)
D/ \( y = 8x \)

SOLVE

\[
3n + 4 = 5(n+2) - 2n
\]

No answers

\[
3n+4 = 5n+10 - 2n
\]

\[\underline{3n+4 = 3n+10} \times \]
A Para-sailor takes off from the dock and slowly reaches the desired altitude. She remains there for 25 minutes and then suddenly a gust of wind snaps her Para-sail from the boat and she falls safely into the ocean. Sketch a graph to represent this situation.

Is this a function?

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>-7</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
</tr>
</tbody>
</table>

No! Two X-values for one Y-value
Bret drives his sister to her new job in the morning on his way to work. Then, he drives to his work place and stays there for about 8 hours. When it is quitting time, he stops to pick up his sister and then they both drive home together. Sketch a graph that represents this situation.

A line passes through the origin and (4,-16). Write the equation for the line.

A/ $y = -4x - 16$
B/ $y = -4x + 16$
C/ $y = 4x$
D/ $y = -4x$
Which equation is NOT linear?

A/ \( y = \frac{1}{2} x + 3 \)

B/ \( y = -5x - 2 \)

C/ \( y = x + 2 \)

D/ \( y = -x \)

What are the steps involved in figuring out the equations (usually linear) from a graph?

1. Pick two points to use with
2. Find slope
3. Plug slope into \( y = mx + b \)
4. Solve for \( b \)
5. Put in line or form \( y = mx + b \)
SOLVE

3(s + 22) = 4(s + 12)

\[ 3s + 66 = 4s + 48 \]

\[ \frac{3s + 66}{3} = \frac{4s + 48}{3} \]

\[ 66 = s + 48 \]

\[ s = 18 \]

Sketch a graph of a Non-linear equation.

Any graph when using the pencil test and more than 1 point hits the line.