

Warm Up

5/22/19

#9-16 on EOC Released Test

Calculator Inactive Section

- 9 The total cost, in dollars, of membership in a fitness center is given by the function $c(m) = 20m + 40$ where m is the number of months a person is a member. In dollars, how much is the cost of a membership for ~~1 year?~~

12 m.

$$20(12) + 40$$

$$240 + 40$$

$$\boxed{\$280}$$

10 Water is being pumped into a 10-foot-tall cylindrical tank at a constant rate.

- The depth of the water is increasing linearly.
- At ~~1:00~~ ^{2.5} p.m., the water depth was 2.4 feet. $(0, 2.4)$
- It is now ~~4:00~~ ^{3.5} p.m., and the depth of the water is 3.9 feet. $(2.5, 3.9)$

What will the depth (in feet) of the water be at ~~5:00~~ ^{3.5} p.m.?

$$m = \frac{3.9 - 2.4}{2.5 - 0} = \frac{1.5}{2.5} = \frac{15}{25} = \boxed{\frac{3}{5}}$$

$$y = 0.6x + 2.4 \quad = 0.6$$

$$y = 0.6(3.5) + 2.4$$

$$y = 2.1 + 2.4$$

$$\begin{array}{r} 3.5 \\ \times 0.6 \\ \hline 210 \end{array}$$

$$\begin{array}{r} 2.1 \\ + 2.4 \\ \hline 4.5 \end{array}$$

$$y = \boxed{4.5 \text{ ft}}$$

11 Sally works at a store.

- x represents Sally's monthly paycheck, and y represents her monthly savings.
- Sally will save at least \$20 more than half of her paycheck each month.
 $y \geq \frac{1}{2}x + 20$
- She can save at most \$80 more than two-thirds of her paycheck each month.
 $y \leq \frac{2}{3}x + 80$
- Her paycheck each month is at least \$1,200, but no more than \$1,850.
 $x \geq 1200$ $x \leq 1850$

Which system of inequalities represents these constraints?

~~A~~

$$\begin{aligned}x &\leq \frac{1}{2}y + 20 \\x &\geq \frac{2}{3}y + 80 \\y &\leq 1,200 \\y &\geq 1,850\end{aligned}$$

B

$$\begin{aligned}y &\geq \frac{1}{2}x + 20 \\y &\leq \frac{2}{3}x + 80 \\x &\geq 1,200 \\x &\leq 1,850\end{aligned}$$

~~C~~

$$\begin{aligned}y &\leq \frac{1}{2}x + 20 \\y &\geq \frac{2}{3}x + 80 \\x &\leq 1,200 \\x &\geq 1,850\end{aligned}$$

~~D~~

$$\begin{aligned}x &\geq \frac{1}{2}y + 20 \\x &\leq \frac{2}{3}y + 80 \\y &\geq 1,200 \\y &\leq 1,850\end{aligned}$$

- 12 A company uses the formula $T = 581s + 150p$ to determine the total cost to purchase s computers and p printers. Which formula can be used to determine the number of printers purchased, given the total cost, T , and the number of computers purchased?

A $p = \frac{T}{150} - 581s$

B $p = T - \frac{581s}{150}$

C $p = \frac{T - 581s}{150}$

D $p = T - 581s - 150$

$$\begin{aligned} T &= \cancel{581s} + 150p \\ &\quad - 581s \quad - 581s \\ \hline T - 581s &= \frac{150p}{150} \end{aligned}$$

$$p = \frac{T - 581s}{150}$$

- 13 What is the value of the positive zero of the function, f , defined by $f(x) = x^2 - 121$?

$$\begin{aligned} & x^2 - 121 \\ & (x + 11)(x - 11) \\ & x + 11 = 0 \quad x - 11 = 0 \\ & x = -11 \quad \boxed{x = 11} \end{aligned}$$

14 What is the value of x in the system of equations shown below?

$$\boxed{-3}$$

$$5x + 4y = 1$$

$$y = 1 - x$$

$$5x + 4(1 - x) = 1$$
$$\underline{5x} + 4 - \underline{4x} = 1$$

$$\cancel{x} + 4 = 1$$
$$-4 - 4$$

$$\boxed{x = -3}$$

15 What is the value of the smaller zero of the function $f(x) = 2x^2 - 8x - 24$?

$$2x^2 - 8x - 24 = 0$$

$$2(x^2 - 4x - 12) = 0 \quad ac = \frac{-12}{-6 \mid 2}$$

$$(x^2 - 6x + 2x - 12) = 0$$

$$\textcircled{x}(x-6) \textcircled{2}(x-6) = 0$$

$$(x+2)(x-6) = 0$$

$$x+2=0 \quad x-6=0$$

$$\boxed{x=-2} \quad x=6$$

Calculator Active Section

- 16 A statistician collected the following data to explore the relationship between two variables, x and y .

x	y
2.3	11.0
4.2	16.5
5.1	19.2
6.4	23.1
8.2	24.3
8.5	29.5

The statistician performed a linear regression and also plotted the residuals.

- Based on the residual plot, the statistician decided to exclude one data point.
- The statistician then performed linear regression on the set of remaining data points.
- The result was that the new linear model fit the remaining data more closely than the original model fit the original data.

Which data point did the statistician exclude?

- A (2.3, 11.0)
- B (4.2, 16.5)
- C (6.4, 23.1)
- D (8.2, 24.3)