

1. Chelsea's cell phone plan charges her 5 cents per text plus a monthly fee of 30 dollars. How many texts did she make last month if her cell phone bill was \$40?

$$.05x + 30 = 40$$

$$.05x = 10$$

$$x = 200$$

2. The number of students who attended a school dance are shown in the table below. Approximately what percent of the female students who attended the dance were in the 12th grade?

	9 th grade	10 th grade	11 th grade	12 th grade
Males	43	67	79	86
Females	51	75	71	84

$$\frac{84}{281} \approx .299$$

- a. 15% (b) 30% c. 43% d. 49%

3. NC: The function $f(t) = -5t^2 + 20t + 60$ models the approximate height of an object t seconds after it is launched. How many seconds does it take the object to hit the ground?

$$-5(t^2 - 4t + -12)$$

$$-5(t - 6)(t + 2)$$

$$t = 6 \quad t = -2$$

6 seconds

4. Suppose you asked 200 people whether they liked broccoli. The results are given in the frequency table below. How many more children than adults were surveyed?

	Yes	No
Children	30	80
Adults	70	20

$$\text{adults} = 70 + 20 = 90$$

$$\text{children} = 30 + 80 = 110$$

20 more children

5. The South Stokes band has 100 members this year. Only freshmen and sophomores are allowed to be members to help get them involved in the school while they are still young. When this group was surveyed about their preference between concert band and marching band the results are shown as a frequency table.

Grade	Concert Band	Marching Band	Total
Freshmen	31	15	46
Sophomores	27	27	54
Total	58	42	100

Which statement is true?

- a. 16 more freshmen students prefer marching band than prefer concert band. \times
 b. 58 students prefer marching band. $42 \times$
 (c) 46 of the students in the club are freshmen. \checkmark
 d. Freshmen prefer marching band. \times

6. NC: The functions $h(x) = -6x^2 + 12x^2$ represents the approximate height of a kangaroo x seconds after it jumps. How many seconds does it take for the kangaroo to hit the ground after it has jumped?

$$-6x(x - 2)$$

$$x = 0 \quad x = 2$$

2 seconds

7. The value of a computer, V , can be modeled by the equation $V = 600(0.903)^x$ with x representing the years since 2008. Which of the following statements best describes the situation?

- a. The value of the computer in 2008 was \$905 and it depreciates by 6% yearly
- b. The value of the computer in 2008 was \$600 and it depreciates by 90.3% yearly
- c. The value of the computer in 2008 was \$905 and it increases by \$600 yearly
- d. The value of the computer in 2008 was \$600 and it depreciates by 9.7% yearly

$1 - .097 = .903$

8. The change of a quantity after x years can be modeled by the function $y = 200(0.96)^x$. Which describes how the quantity changes each year?

- a. It is decreasing at an annual rate of 0.96%.
- b. It is growing at an annual rate of 96%.
- c. It is decreasing at an annual rate of 96%.
- d. It is decreasing at an annual rate of 4%.

$1 - .04 = .96$

9. Given $f(x) = 4x + 2$ and $g(x) = 2x + 3$, when does $f(x) = g(x)$? on calc \rightarrow intersection

- a. 0.6
- b. 3.2
- c. 4.8
- d. 1.9

10. The difference of twice Peter's age and 3 times Sam's age is 6. Peter's age is 2 less than 4 times Sam's age. Find Sam's age.

$$\begin{aligned} 2p - 3s &= 6 & 2(4s - 2) - 3s &= 6 \\ p &= 4s - 2 & 8s - 4 - 3s &= 6 \end{aligned}$$

11. Over the weekend, Bill played ten games of bowling and recorded the following scores:

Game	1	2	3	4	5	6	7	8	9	10
Score	136	142	160	151	217	163	135	142	149	150

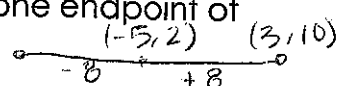
According to the line of best fit for the data, approximately what would Bill's score be if he were to play an 11th game?

- a. 128
- b. 154
- c. 202
- d. 22

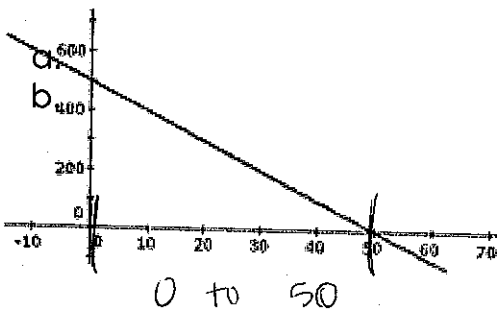
$y = -0.1x + 155$
 $-0.1(11) + 155 = 153.9$

12. The midpoint of a segment has coordinates $(-5, 2)$. The coordinates of one endpoint of the segment are $(3, 10)$. What are the coordinates of the other endpoint?

- a. $(-1, 6)$
- b. $(-7, -6)$
- c. $(-13, -6)$
- d. $(-13, 6)$



13. The attendance for the school play is a function of the ticket price and is shown below. What is the domain of the function?



What is the domain of the function?

- a. all real numbers
- b. all real numbers > 0
- c. all positive integers ≤ 50
- d. all positive integers between 0 and 500.

integers are counting #s

14. A triangle has the vertices $T(2, 3)$, $R(4, -1)$, and $I(-1, -5)$. What is the approximate perimeter of the triangle?

$$\begin{aligned} TR &= \sqrt{(2-4)^2 + (3-(-1))^2} & RI &= \sqrt{(4-(-1))^2 + (-1-(-5))^2} & TI &= \sqrt{(2-(-1))^2 + (3-(-5))^2} \\ & \approx 4.5 & & \approx 6.4 & & \approx 8.5 \end{aligned}$$

- a. 10
- b. 13
- c. 16
- d. 19

15. The table below shows the distance a car has traveled.

Minutes	25	50	75	100	125
Distance Traveled (in miles)	20	40	60	80	100

$$\frac{40-20}{50-25} = \frac{20}{25} = \frac{4}{5} \text{ miles per minute}$$

What is the meaning of the slope of the linear model for the data?

- a. The car travels 5 miles every minute.
 b. The car travels 4 miles every minute.
 c. The car travels 4 miles every 5 minutes.
 d. The car travels 5 miles every 4 minutes.

16. The sum of twice Becky's age and 3 times Michelle's age is 3. Michelle's age is 7 less than twice Becky's age. Find Becky's age.

$$2b + 3m = 3$$

$$m = 2b - 7$$

$$2b + 3(2b - 7) = 3$$

$$2b + 6b - 7 = 3$$

$$8b - 7 = 3$$

$$8b = 10$$

$$b = \frac{5}{4}$$

$$b = \frac{5}{4}$$

17. Factor $10a^3b - 6a^2b^2$
 $2a^2b(5a - 3b)$

- a. $2a^2(5ab - 3b)$ b. $10(a^3b - 6a^2b^2)$ c. $2a(5a^2b - 3ab)$ d. $2a^2b(5a - 3b)$

18. The number of cells, C, in a Petri dish at a certain hour after 3:00 PM, h, is given by the equation $B = 2(3)^h$. What is the practical domain of this equation?

- a. all hours after 2:00 PM
 b. all hours after 3:00 PM
 c. all hours after 4:00 PM
 d. all real numbers

19. Sam owns a clothing manufacturing business. The function $C(x) = 15x + 122$ describes the amount it costs to employ a seamstress for x number of hours per week. What would be a reasonable domain for this function?

- a. $-40 \leq x \leq 40$ b. $0 < x \leq 40$ c. $0 \leq x \leq 1000$ d. All real numbers

20. The table below shows the amount of cars having been through the gas station for the hours it is open.

Hours Open	3	6	9	12	15
Cars	60	120	180	240	300

$$\frac{120-60}{6-3} = \frac{60}{3} = \frac{20}{1} \text{ cars per hour}$$

What is the meaning of the slope of the linear model for the data?

- a. The gas station is open 20 hours for every car it serves.
 b. The gas station serves 1 car every 20 minutes.
 c. The gas station serves 60 cars per hour.
 d. The gas station serves 20 cars per hour.

21. A spring stretches linearly as weight is added. The table shows data collected for a certain spring.

Weight (g)	100	500	800	900	1200
Stretch (cm)	.5	2.5	4	4.5	6

$$\frac{2.5 - .5}{500 - 100} = \frac{2}{400} = \frac{1}{200}$$

How much does the spring stretch for each gram of weight added?

- a. $\frac{1}{200}$ b. $\frac{1}{100}$ c. $\frac{1}{50}$ d. $\frac{1}{2}$

22. The sum of twice Patty's age and her mother's age is 74. Her mother's age is 14 more than three times Patty's age. What is Patty's age?

$$2p + m = 74$$

$$m = 14 + 3p$$

$$2p + 14 + 3p = 74$$

$$5p + 14 = 74$$

$$5p = 60$$

$$\boxed{p = 12}$$

23. Twelve times Kim's age plus 2 times Kristi's age is 320. Kristi is 6 years older than Kim. How old are the two women?

$$12k + 2r = 320$$

$$r = k + 6$$

$$12k + 2(k + 6) = 320$$

$$12k + 2k + 12 = 320$$

$$14k + 12 = 320$$

$$14k = 308$$

$$k = 22$$

24. Which is an equation of a line that passes through $(-3, 2)$ and is perpendicular to the graph of $y = 3x + 7$?

$$m = -\frac{1}{3}$$

$$2 = -\frac{1}{3}(-3) + b$$

$$2 = 1 + b$$

$$1 = b$$

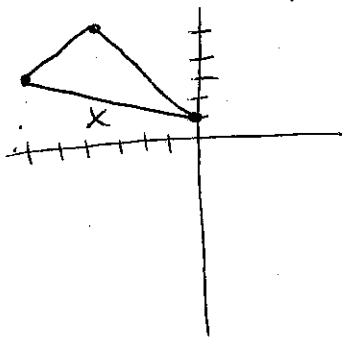
~~$$a. y = -3x - 7$$~~

$$(b.) y = -1/3x + 1$$

~~$$c. y = -1/3 + 3$$~~

~~$$d. y = 1/3x + 3$$~~

25. Find the midpoint of the longest side of a right triangle with vertices $(-4, 5)$, $(-6, 3)$, $(0, 1)$



$$\left(\frac{-6+0}{2}, \frac{3+1}{2} \right)$$

$$(-3, 2)$$