



What: This is a required summer assignment that will both review the content we studied in algebra and prepare you for geometry. It will be graded for accuracy and completion by your math teacher next school year. It will count as your first minor assessment for quarter 1.

Why: Just like the muscles you would use to play an instrument or play sports, your brain is a muscle that needs practice. In your humanities course you will have a summer reading assignment. This will help your reading skills stay strong throughout the summer. It is important to do the same with mathematics. While we math teachers are convinced that you do math all the time without realizing it, we also want to give you some practice that is a little more like what you see while you are in school. If you do not do any math all summer you're math muscles will get weak and soft! Instead, you should do this assignment to keep your math muscles strong so that you can be ready for next school year.

When: While it is worthwhile to do this packet at any point this summer, your math teacher will be really happy if you spread out the work over the summer. Your muscles will be much stronger if you do some practice every week rather than if you were to do one intense workout and nothing the rest of the summer (ask Mr. Gibson, it's true!). So, below is a schedule to help you organize your practice and get you ready for your math class next year. For credit you should plan to turn this packet in on the first day of the next school year, August 30.

1. Questions 1-6 (July 2-8)
2. Questions 7-11 (July 9 – 15)
3. Questions 12-16 (July 16 – 22)
4. Questions 17-22 (July 23 – 29)
5. Questions 23-26 (July 30 – August 5)
6. Questions 27-29 (August 6 – 12)
7. Questions 30-33 (August 13 – 19)
8. Questions 34-37 (August 20 – 26)

1) A certain type of bacteria is growing on a bathroom faucet in such a way that the number of cells is growing exponentially. The number of cells C on the faucet at time t is modeled by the function $C(t) = ab^t$, where a and b are constants and t is measured in days. The table shows two values of the function.

t	$C(t)$
0	80
1	320

Which of the following represents the function?

- a) $C(t) = 4(80)^t$
- b) $C(t) = 80(240)^t$
- c) $C(t) = 80(4)^t$
- d) $C(t) = 240(80)^t$

2) If $f(x) = x^2 - 6x + 10$, which statement regarding the vertex form of $f(x)$ is true?

- a) When $f(x)$ is in vertex form it is $f(x) = (x - 3)^2 - 1$ and so its lowest point is at $(3, -1)$.
- b) When $f(x)$ is in vertex form it is $f(x) = (x + 3)^2 - 1$ and so its lowest point is at $(-3, -1)$.
- c) When $f(x)$ is in vertex form it is $f(x) = (x - 3)^2 + 1$ and so its lowest point is at $(3, 1)$.
- d) When $f(x)$ is in vertex form it is $f(x) = (x+3)^2 + 1$ and so its lowest point is at $(-3, 1)$.

3) What are the zeroes of the equation $4x^2 - 1 + 8x = 0$?

- A) $x = \frac{-2 \pm \sqrt{5}}{2}$
- B) $x = \frac{2 \pm \sqrt{5}}{2}$
- C) $x = \frac{2 \pm \sqrt{2}}{2}$
- D) $x = \frac{-2 \pm \sqrt{2}}{2}$

4) Which equation represents the situation?

x	1	2	3
y	10	50	250

- a) $y = \frac{1}{2}(5)^x$
- b) $y = 5(2)^x$
- c) $y = 5\left(\frac{1}{2}\right)^x$
- d) $y = 2(5)^x$

5) Solve. $|2x + 9| = 30$

6) What is the value of x in the equation $6^{8x+10} = 36$?

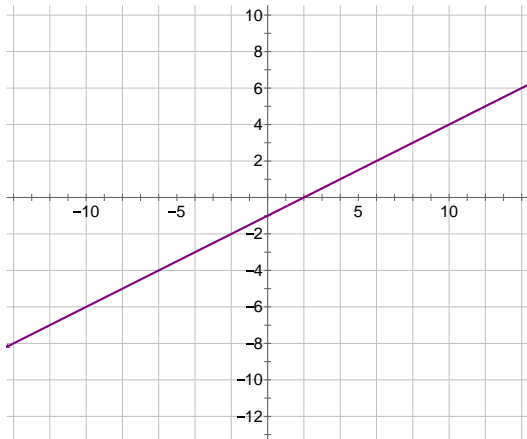
Four linear functions are represented below. Use them to answer questions 7 – 11.

a) $\{(-7,5),(0,5)\}$

b)

x	y
9	9
11	8
13	7
15	6
17	5

c)



d) $\{(5,7),(-2,0)\}$

7) What is the rate of change of scenario a? Show or explain your work.

8) What is the rate of change of scenario b? Show or explain your work.

9) What is the rate of change of scenario c? Show or explain your work.

10) What is the rate of change of scenario d? Show or explain your work.

11) Which linear relationship represents a zero rate of change? Show or explain your work.

12) The equations $12y + x = 68$ and $2x + 10y = 66$ represent the money collected from school concert ticket sales during two class periods. If x represents the cost for each adult ticket and y represents the cost for each youth ticket, what is the cost for each adult ticket?

- A) \$5
- B) \$8
- C) \$10
- D) \$13

13) Which of the following is/are root(s) to the equation $x^2 + 10x = 0$? Select all that apply.

- 10
- 1
- 0
- 1
- 10

14) The drama club at CCSC has had 50 programs printed to sell as a fundraiser. It costs the drama club \$6 per program to have the programs printed and the club sells them for \$10 per program. The drama club's profit, y , is given by the following equation where x represents the number of programs sold.

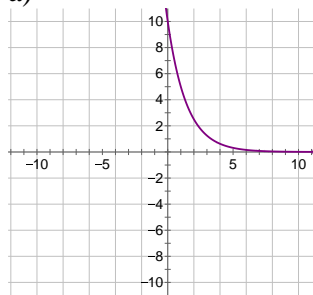
$$y = 10x - 300$$

How many programs does the drama club have to sell in order to break even? Explain your reasoning.

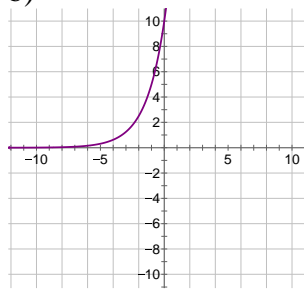
15) Solve $W = \frac{1}{4}\pi x^2 s$ for s .

16) Which graph represents the function $y = 10(0.5)^x$?

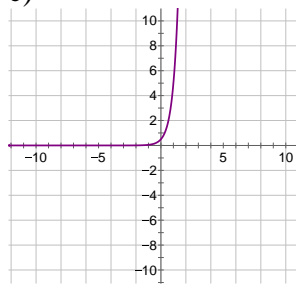
a)



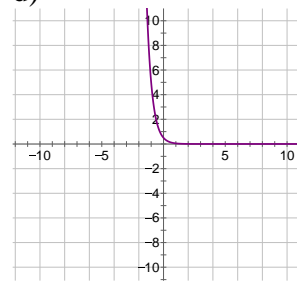
b)



c)



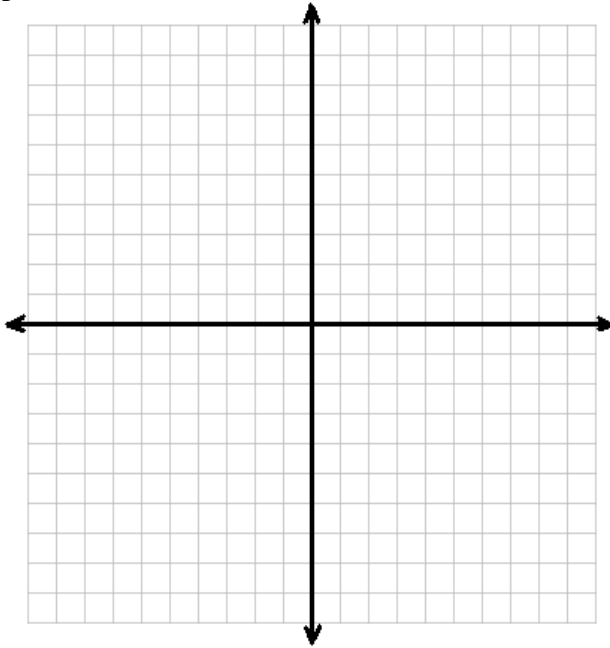
d)



Use the following representations of the function $g(x)$ to answer questions 17-19.

$$\begin{cases} g(x)_1 = (x - 4)(x + 2) \\ g(x)_2 = x^2 - 2x - 8 \\ g(x)_3 = (x - 1)^2 - 9 \end{cases}$$

17) Graph the function $g(x)$ below. Plot at least 5 points.



18) Describe the process for graphing the 5th point.

19) These three equations all describe the same function.

	What are the coordinates of the following points on the graph of the function?
vertex	
y-intercept	
x-intercept(s)	

20) Write a quadratic equation whose graph has a vertex at (4, 10). _____

21) Write a quadratic equation whose y-intercept is at (0, 3). _____

22) Write a quadratic equation whose x-intercepts are at (1, 0) and (-2, 0). _____

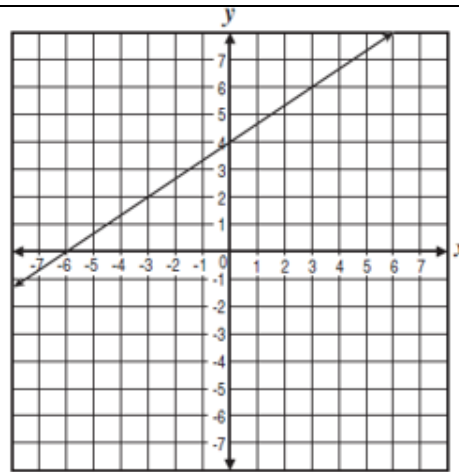
23) Ms. Hogan's advisory stops for snacks at a food stand at Kanobie Lake. Valentine buys two soft pretzels and a hot dog for \$6.00. Quiearah buys a soft pretzel and a hot dog for \$4.25. How much does Dimitre owe for a pretzel and two hot dogs?

24) Which of the following is a true statement?

- a) $\sqrt{80} = 16\sqrt{5}$
- b) $\sqrt{75} = 5\sqrt{15}$
- c) $\sqrt{60} = 2\sqrt{15}$
- d) $\sqrt{32} = 2\sqrt{16}$

25) Which of the following equations represents the line graphed on the coordinate plane to the right?

- a) $y = \frac{2}{3}x + 4$
- b) $y = \frac{2}{3}x - 6$
- c) $y = \frac{3}{2}x + 4$
- d) $y = \frac{3}{2}x - 6$



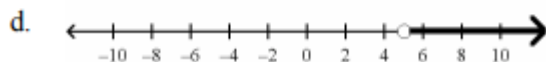
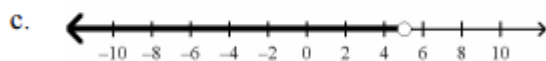
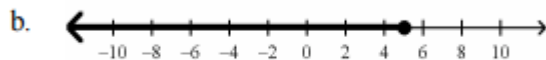
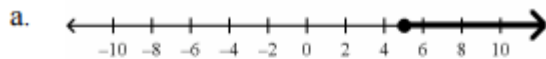
26) If $-4v - 19 = -3(v + 5) + 3v$, what is the value of $2v + 10$?

27) The school that Stefan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of \$38. The school took in \$52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

28) The director had 205 dancers with mixed skills. 72 dancers were trained in both folk and classical dance. 43 trained in classical dance, but not folk. 62 dancers were not trained in either discipline. Create a two way frequency table to represent this situation.

29) Which of the following represents all values of x that satisfy the inequality below?

$$-13 > -3x + 2$$



30) A set of data has correlation coefficient r . For which value of r would the data points lie closest to a line?

- a) $r = -0.96$
- b) $r = 0$
- c) $r = 0.38$
- d) $r = 0.5$

31) If $p - 14 < 6$, which of the following CANNOT be the value of p ?

- a) 20
- b) 19
- c) 18
- d) 17

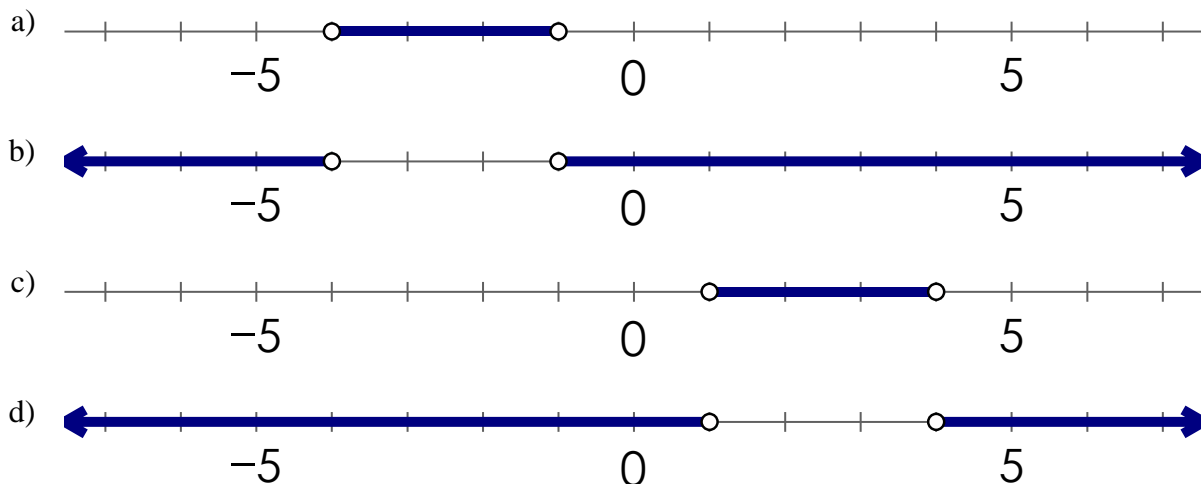
32) Rewrite the expression $-x(2x - 3y + 42) - 3y(8x + 4y - 10) - (14x - 8y)$ to find the coefficients of each term. What is the coefficient of the xy term?

- a) -21
- b) -27
- c) 21
- d) 3

33) A compound inequality is shown below.

$$5 < 2 - 3y < 14$$

Which of the following graphs shows the solution set for the inequality shown below?



Line j is represented by the equation below.

$$\text{line } j: y = \frac{1}{3}x + 6$$

34) What is the slope of line j ?

35) What is the slope of any line that is parallel to line j ?

36) Write an equation in slope-intercept form for the line, k , that is parallel to line j and passes through the point with coordinates $(9,1)$.

37) Write an equation in slope-intercept form for the line, h , that is **perpendicular** to line j and passes through the point with coordinates $(1,-7)$.