



What: This is a mandatory packet that will both review the content we studied in IMC and prepare you for your upcoming math class (Algebra 1 for most of you). It will be graded for accuracy and completion by your math teacher next school year. The content is organized such you can use Khan Academy if you want.

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!). You are required to turn this packet in on the first day of the next school year. **It will be graded for completion and accuracy, and it will count as a minor assessment.**

Here's a schedule to help you spread out the problems throughout the summer.

1. Questions 1-16 (July 2-8)
2. Questions 17-21 (July 9 – 15)
3. Questions 22-28 (July 16 – 22)
4. Questions 29-36 (July 23 – 29)
5. Questions 37-42 (July 30 – August 5)
6. Questions 43-47 (August 6 – 12)
7. Questions 48-54 (August 13 – 19)
8. Questions 55-63 (August 20 – 26)

Show ALL work on a separate sheet of paper!

Simplify:

1.) $-5^3 =$ _____ 2.) $4^{-2} =$ _____ 3.) $(n^3)^4 =$ _____ 4.) $b^3 \cdot b^{-5} =$ _____

5.) $4y + 3x - 10y + 7x$ 6.) $-3m - 8v - 4m + 5v$ 7.) $-3(4h - 2p) + 5h$

8.) $\sqrt{75} =$ _____ 9.) $2\sqrt{48} =$ _____ 10.) $\sqrt{72} =$ _____

Solve:

11.) $-5m + 8 = 2m + 29$ 12.) $-4(3k + 5) = -16k$ 13.) $\frac{1}{2}(15j - 25) = \frac{3}{2}(12 - 15)$

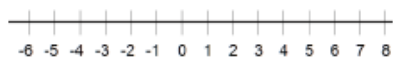
$m =$ _____ $k =$ _____ $j =$ _____

Solve and graph the solution:

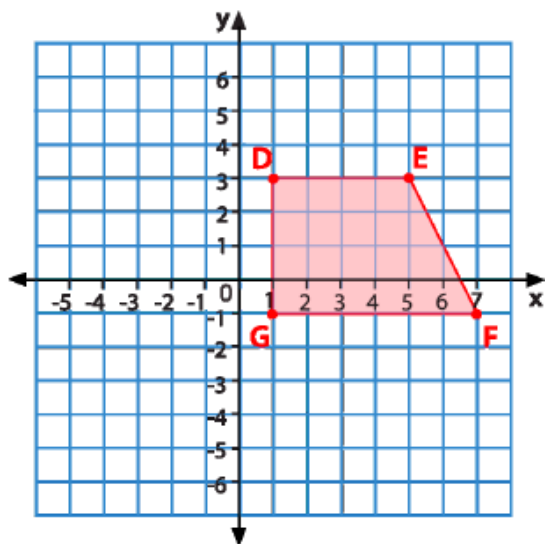
14.) $-12 > -2m - 2$

15.) $\frac{3}{4}(24 - 8y) \leq 15y - 24$

16.) $\frac{w}{3} + (-8) \leq -10$



Use the coordinate plane below to answer questions 17-19



17.) If quadrilateral DEFG is reflected across the y-axis, list the new coordinates for each point.

D: (,) E: (,) F: (,) G: (,)

18.) If quadrilateral DEFG is reflected across the x-axis, list the new coordinates for each point.

D: (,) E: (,) F: (,) G: (,)

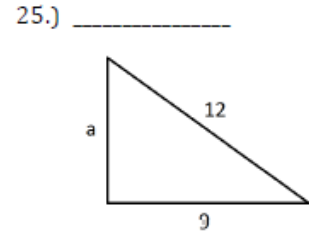
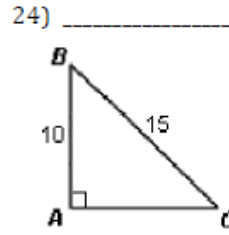
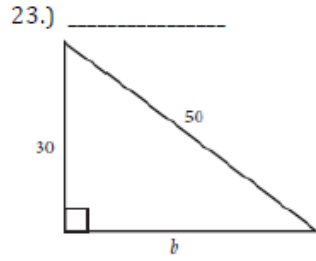
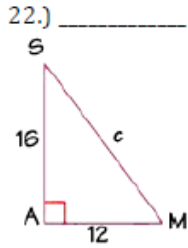
19.) If quadrilateral DEFG is rotated 90° clockwise about the origin, list the new coordinates for each point

D: (,) E: (,) F: (,) G: (,)

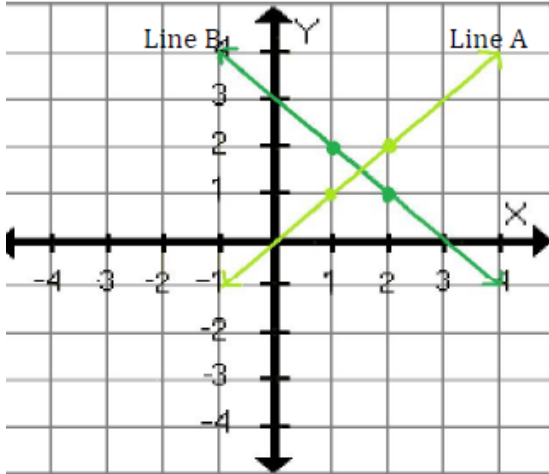
20.) Point A is located at the coordinate $(-3, -5)$; if this point is rotated 180° about the origin, what will be the new coordinates of point A'?

21.) Point J is located at the coordinate $(6, -2)$; if point J is rotated 90° counter-clockwise, what will be the new coordinates of point J'?

Find the missing side length for each right triangle below:



Use the coordinate plane below to answer questions 26-28.

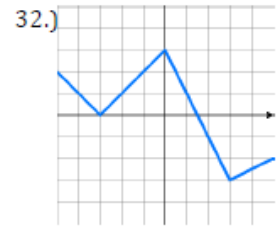
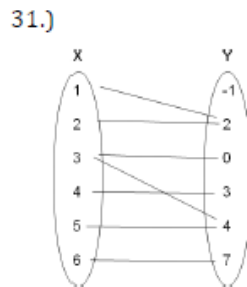
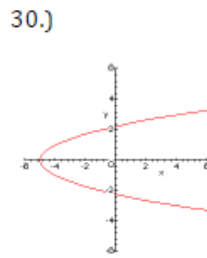
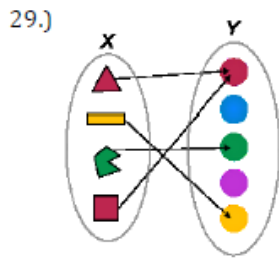


26.) Which line represents a proportional relationship? Explain.

27.) Write an equation for line "A" in slope-intercept form.

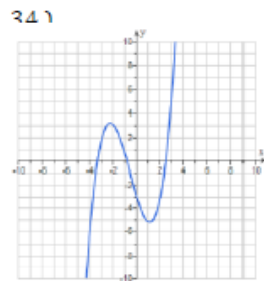
28.) Write an equation for line "B" in slope-intercept form.

Decide whether each relation below is a function or not, and explain your answer.



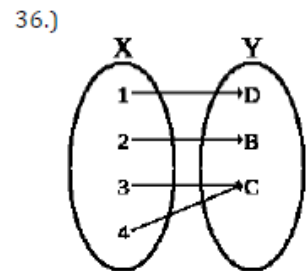
33.)

X	Y
2	7
3	5
4	2
4	3

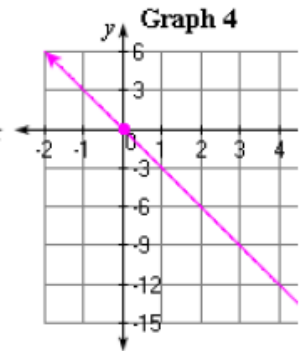
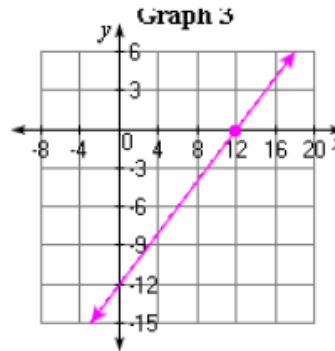
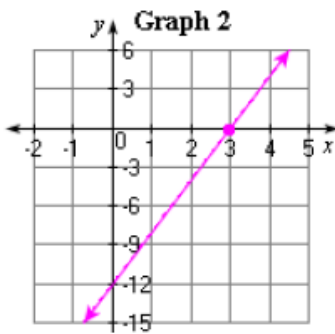
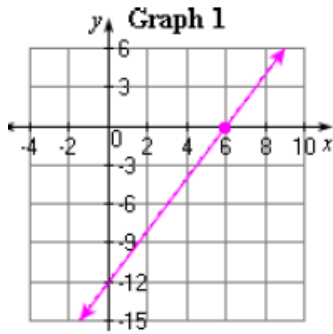


35.)

X	Y
1	6
2	6
3	6
7	6



Match each graph with the correct linear equation:



37.) $y = x - 12$ Graph _____ 38.) $y = -3x$ Graph _____ 39.) $y = 2x - 12$ Graph _____ 40.) $y = 4x - 12$ Graph _____

41.) Match each expression with its solution:

- a. $\frac{x^4}{x^5}$ _____ $\frac{1}{x}$
 b. $x^3 \cdot x^{-2}$ _____ 1
 c. $(x^2)^0$ _____ x

42.) Match each expression with its solution:

- a. $y^{-4} \cdot y^6$ _____ $\frac{1}{y^2}$
 b. $(y^2)^{-1}$ _____ y^2
 c. $\frac{y^4}{y}$ _____ y^3

43.) Match each irrational # with the best estimate

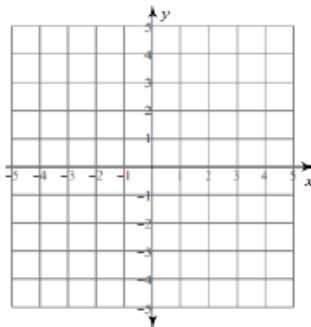
- a. $\sqrt{54}$ _____ 6.7
 b. $\sqrt{75}$ _____ 5.9
 c. $\sqrt{28}$ _____ 8.7
 d. $\sqrt{44}$ _____ 7.3
 e. $\sqrt{84}$ _____ 9.2
 f. $\sqrt{35}$ _____ 5.2

44.) Match each irrational # with its simplified form

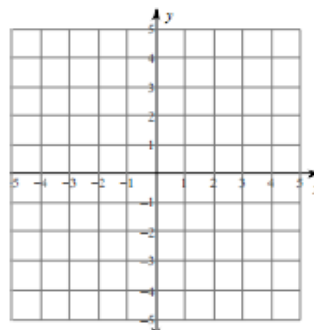
- a. $\sqrt{50}$ _____ $3\sqrt{5}$
 b. $\sqrt{45}$ _____ $5\sqrt{5}$
 c. $\sqrt{32}$ _____ $3\sqrt{2}$
 d. $\sqrt{48}$ _____ $5\sqrt{2}$
 e. $\sqrt{18}$ _____ $4\sqrt{3}$
 f. $\sqrt{125}$ _____ $2\sqrt{8}$

Solve each system of equations by graphing:

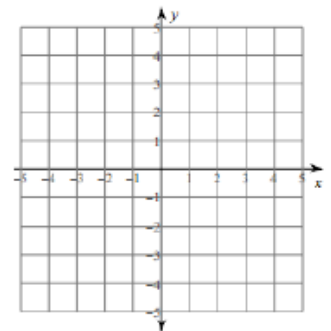
45.) $y = 4x + 3$
 $y = -x - 2$



46.) $y = -\frac{5}{3}x + 3$
 $y = \frac{1}{3}x - 3$



47.) $y = -\frac{1}{2}x - 1$
 $y = \frac{1}{4}x - 4$



Find the value of "x" and "y" in each system of equations using substitution or elimination:

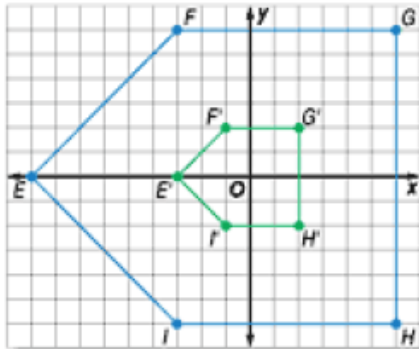
48.) $-4x + 9y = 9$
 $x - 3y = -6$

49.) $5x + y = 9$
 $10x - 7y = -18$

50.) $16x - 10y = 10$
 $-8x - 6y = 6$

51.) $-7x - 8y = 9$
 $-4x + 9y = -22$

Use the image below to answer questions 52-54.



52.) Polygon EFGHI was dilated to form polygon E'F'G'H'I'. What scale factor was used?

53.) Which describes polygon EFGHI and polygon E'F'G'H'I'?

a. Congruent figures b. Similar figures c. Neither

54.) If polygon EFGHI was rotated 90° counterclockwise about the origin, what would be the coordinates of the new points?

E: (__, __) F: (__, __) G: (__, __) H: (__, __) I: (__, __)

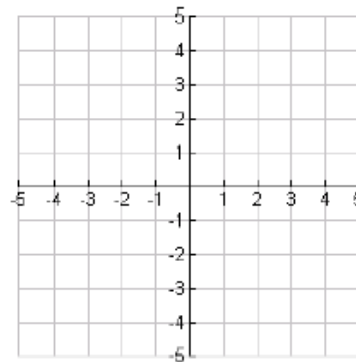
Change each linear equation to slope-intercept form (if needed), and then graph the lines on the coordinate plane.

55.) Line 1: $y = 3x + 1$

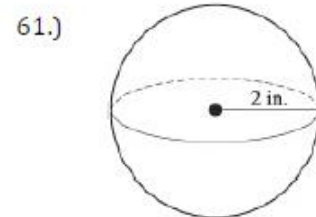
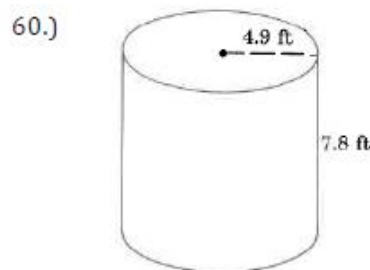
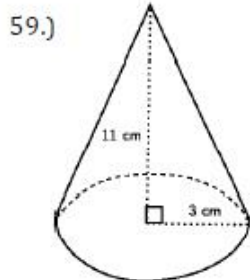
56.) Line 2: $y = -\frac{3}{4}x$

57.) Line 3: $2x + 4y = 12$

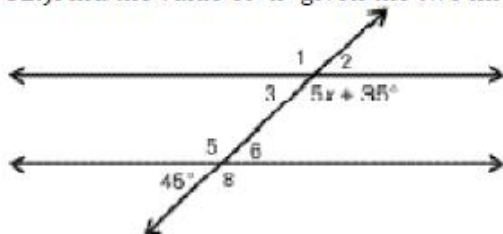
58.) Line 4: $x - 5y = 10$



Find the volume of each geometric solid:



62.) Find the value of "x" given the two lines are parallel.



63.) Find the value of "x" and "y"

