



Clement Middle School

Dear Mathematic I Honors Student,

Familiarity with 7th & 8th grade math concepts is essential for success in the Integrated Math I Honors class. The majority of the problems posed in Math I require a working fluency of Math 8 topics as well as an excellent understanding of basic mathematical operations used with many forms of numbers like decimals and fractions.

Print out the summer work packet and complete all problems. Start your Math I focused notes composition/lab notebook with details on concepts and mathematical processes you would like to have quick reference to during class. Memorize and/or have a working knowledge of all definitions and formulas that are present in the packet. Understanding basic mathematics and linear algebra concepts will be VERY important to your success in this class; spend the time necessary to understand these topics.

Your job:

- Mentally condition your concept fluency by NOT using a calculator to do anything in the packet.
- Show your work in organized sequenced steps that clearly communicate your choices.
- Make sure your work is legible.
- Prepare your packet for submission by stapling it in the order it was presented to you with your full name on the front page right upper corner.

It is vital that you complete this packet before the beginning of the first day of class. The packet will be your first official grade in the grade book.

This is not meant to be busy work. You absolutely need to be fast and efficient with the skills represented here to be successful in Math I Honors accelerated math class next year.

See you on day 1 of next year!

Mr. Rochester

VOCABULARY:

Match the given words to the correct definition. Write the answers on this page.

absolute value	equation	area	prime number	sum
base	exponent	integers	counter example	variable
composite numbers	expression	perimeter	quotient	difference
factors	ordered pair	rational number	function	median
irrational number	opposites	inverse operations	coefficient	mean
mode	domain	range	product	conjecture
congruent	volume			

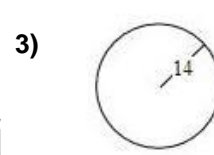
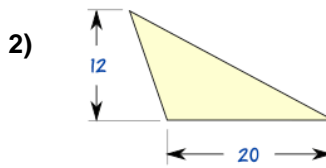
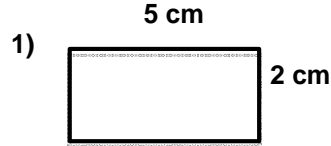
1. _____	a mathematical sentence that contains an equal sign
2. _____	made up of quantities and the operations performed on them
3. _____	symbol that is used to represent a number
4. _____	used to locate points (x,y) in the coordinate plane
5. _____	the amount of square units required to fill a two dimensional space
6. _____	found by taking the sum of all the values and dividing by the number of values
7. _____	the solution to an addition problem
8. _____	the solution to a subtraction problem
9. _____	the solution to a multiplication problem
10. _____	the solution to a division problem
11. _____	whole numbers and their opposites (...-3, -2, -1, 0, 1, 2, 3...) symbol is Z
12. _____	the number that appears most often in a set of numbers
13. _____	the distance around the outside of an object
14. _____	a number that can be expressed in the form a/b , in which a and b are integers and $b \neq 0$ (Symbol is Q)
15. _____	a number's distance away from 0
16. _____	the middle number in a set of numbers when the numbers are arranged from least to greatest
17. _____	the quantities that are multiplied in a multiplication expression
18. _____	a whole number greater than one, with exactly two factors, 1 and itself
19. _____	a whole number greater than 1 that has more than 2 factors
20. _____	"x" in an expression of the form x^n
21. _____	two numbers that are the same number from zero on the number line, but on opposite sides
22. _____	two operations that undo each other, such as addition and subtraction
23. _____	if a term of an expression consists of a number multiplied by one or more variables, the number is called
24. _____	the "n" in an expression of the form x^n
25. _____	the collection of all input values of a function
26. _____	a rule that establishes a relationship between two quantities, the input and output
27. _____	the collection of all output values of a function
28. _____	any number that cannot be written in the form a/b , such as π
29. _____	an example that shows a conjecture false
30. _____	an unproven statement based on observations
31. _____	the amount of cubic units required to fill a 3 dimensional space
32. _____	the same, used for geometric figures

GEOMETRY FORMULAS

Reminders:

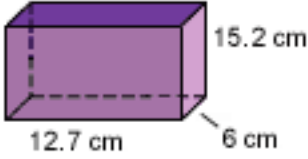

- pi (π) \approx 3.14
- units **MUST** be written

Practice: (assume all units are cm)



	Area	Perimeter
1) rectangle	$A = LW =$	$P = 2L + 2W =$
2) triangle	$A = \frac{1}{2} bh =$	
3) circle	$A = \pi r^2 =$	Circumference = $2\pi r$ or $\pi d =$

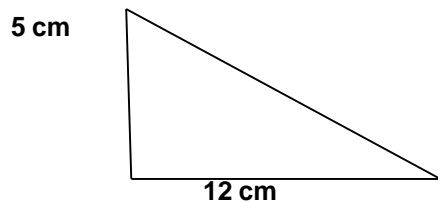
Find the volume of the given shape: (assume all units are cm)

Volume (units ³)	
1) Rectangular Prism $V = lwh$	
2) Cylinder $V = \pi r^2 h =$	 Radius = 3 Height = 5

PYTHAGOREAN THEOREM

$$a^2 + b^2 = c^2 \quad (\text{RIGHT TRIANGLES ONLY!})$$

Find the length of the hypotenuse



IDENTITY AND EQUALITY PROPERTIES (used to simplify expressions)

For any numbers a, b, c

Additive Identity Property	$a + 0 = 0 + a = a$
Multiplicative Identity Property	$a * 1 = 1 * a = a$
Multiplicative Property of Zero	$a*0 = 0*a = 0$
Substitution Property	If $a = b$, then a may be replaced by b
Reflexive Property	$a = a$
Symmetric Property	If $a = b$, then $b = a$
Transitive Property	If $a = b$ and $b = c$, then $a = c$
Distributive Property	$a(b+c) = ab + ac$ and $a(b-c) = ab - ac$
Commutative Property	$a + b = b + a$ and $a * b = b * a$
Associative property	$(a+b)+c = a+(b+c)$ and $(ab)c = a(bc)$

PRACTICE: Name the property illustrated by each statement

1)	$21 + 0 = 21$	
2)	$0(15) = 0$	
3)	$x^3 * 1 = x^3$	
4)	$4 + 3 = 4 + 3$	
5)	$6x + 2y = 2y + 6x$	
6)	$(14 - 6) + 3 = 8 + 3$	
7)	If $x + y = 9$ then $9 = x + y$	
8)	$9(r^2 + s^2) = 9r^2 + 9s^2$	
9)	If $3 + 3 = 6$ and $6 = 3 * 2$, then $3 + 3 = 3 * 2$	
10)	$(2c + 6) + 10 = 2c + (6 + 10)$	

Summer Work Packet**Evaluate each expression.**

1) $(-22) - (-1) + 49$

2) $(-12) + 48 + 25$

3) $37 - (-38) - (-14)$

4) $(-11) - 46 + (-49)$

5) $49 + 28 - (-20)$

6) $36 + (-23) + 10$

Find each product.

7) $(-11)(8)(10)$

8) $(8)(-14)(-6)$

9) $(15)(-16)(-2)$

10) $(-5)(3)(9)$

11) $(-15)(8)(10)$

12) $(15)(-15)(-13)$

Find each quotient.

13) $98 \div -7$

14) $10 \div 5$

15) $-63 \div 7$

16) $48 \div -4$

17) $-75 \div 15$

18) $195 \div 15$

Evaluate each expression. Show each step of your work in the space provided.

19) $(-10) + 9 - 8 + 10$

20) $(-4) - \frac{3 \times 2}{-1}$

21) $\frac{(-18) \times 2}{-4}$

22) $(-7) \times (-1)^3 - 8$

23) $\frac{9 \times 2 \times 2}{6}$

24) $7 - (8 + (-4)^3)$

Evaluate each expression using the values given. Show your work in the space provided.

25) $3(y + y \div 3) + x$; use $x = 3$, and $y = 3$

26) $k(j + j^2 \div 5)$; use $j = 5$, and $k = 3$

27) $z + x + 2 + z - y$; use $x = 6$, $y = 1$, and $z = 5$

28) $3^3 - m - (n - n)$; use $m = 2$, and $n = 4$

29) $y - (y + x - z) \div 3$; use $x = 4$, $y = 5$, and $z = 6$

30) $4^2 \div 4 + j + h$; use $h = 5$, and $j = 5$

Simplify each expression.

31) $3 + 7x - 2x - 5$

32) $n + 2 + 3$

33) $8v - 7v$

34) $-2n - 5n$

35) $-6 - 7n - 8n - 6$

36) $n - 5 + 8n$

37) $6a + 4a$

38) $-8r + 3r$

39) $4 + 3n - 6 + 10n$

40) $-7 + 3(n + 3)$

41) $x - 6(2x + 3)$

42) $-2(-4 - 4x) + 7x$

43) $(3r^4 + 2) - (2 - r^4)$

44) $(5x^4 + 2x^3) - (4x^3 + x^4)$

45) $(4n^4 + 2n) + (3n^4 - 4n)$

46) $(7x + 4 + 5x^2) - (4x^3 + 7 - 6x^2)$

47) $(8x^2 + 4x + 6x^4) - (5 - 6x^2 + 5x^4)$

48) $(8 - 2p^2 + 6p^4) + (6p^4 - 7p^2 - 4)$

Solve each equation. Show your work in the space provided.

49) $6 - n = -3$

50) $-45 = x + (-21)$

51) $36 = 19 + x$

52) $-20 = \frac{v}{21}$

53) $5 = -24 - v$

54) $-13n = 52$

55) $-90 = 5(-4 + 2r)$

56) $211 = 6(4 - 8m) - 5$

57) $156 = -4(5x - 4)$

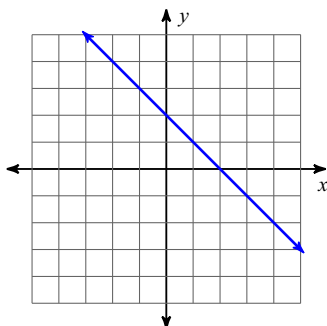
58) $8(-4x + 8) - x = -167$

59) $-7(p + 7) = -84$

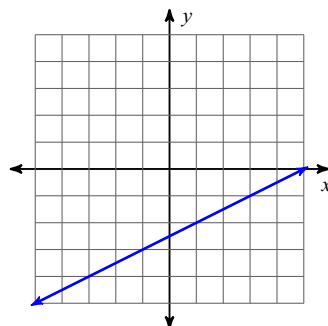
60) $84 = -3(b - 7) - 6b$

Find the slope of each line.

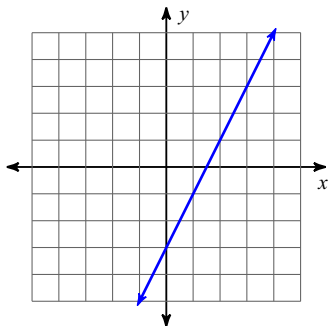
61)



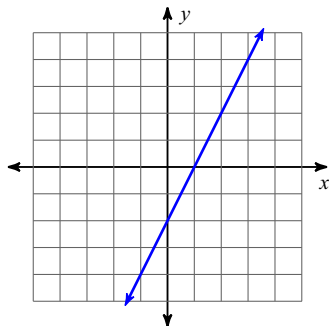
62)



63)

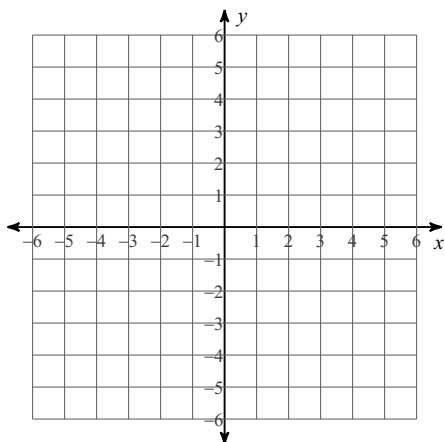


64)

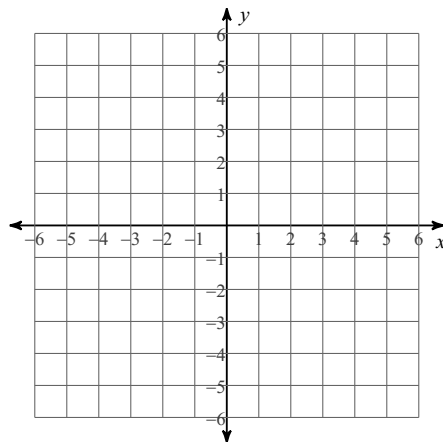


Sketch the graph of each line.

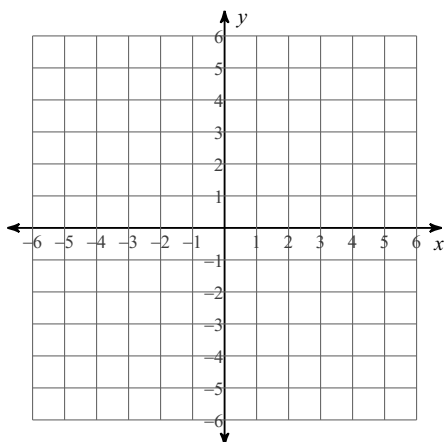
65) $y = -\frac{3}{4}x + 3$



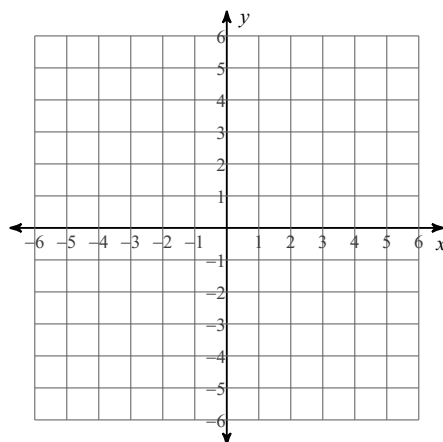
66) $y = 3x + 5$



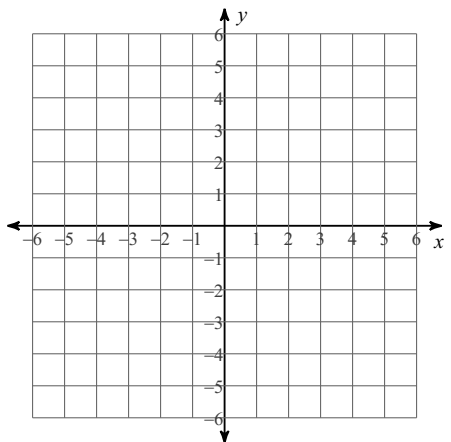
67) $y = -1$



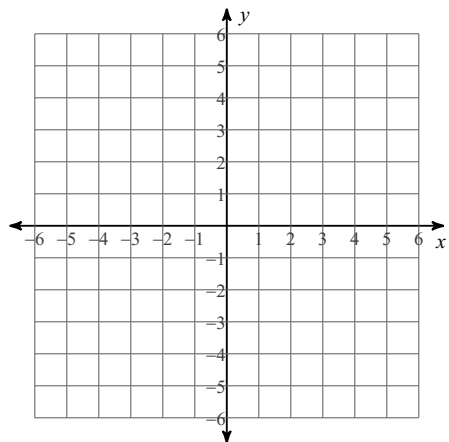
68) $y = -x - 4$



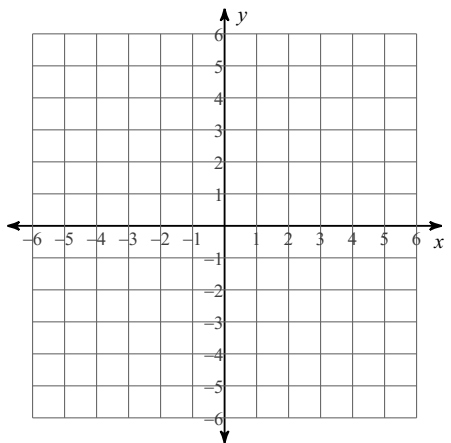
$$69) y = \frac{1}{3}x - 2$$



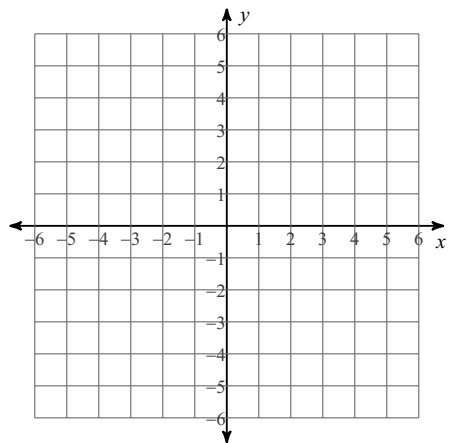
$$70) y = -\frac{6}{5}x + 4$$



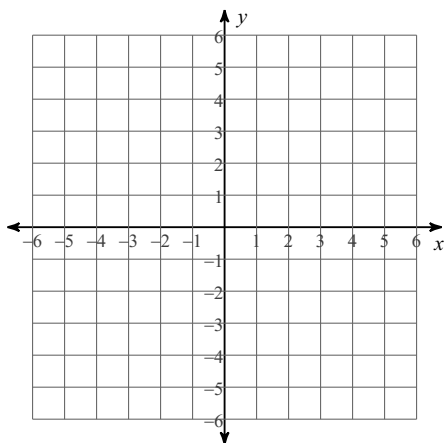
$$71) x - y = -4$$



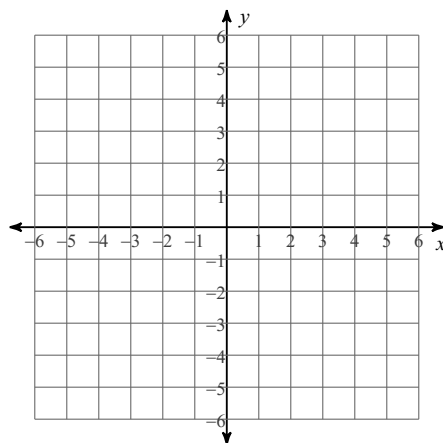
$$72) x + 4y = -8$$



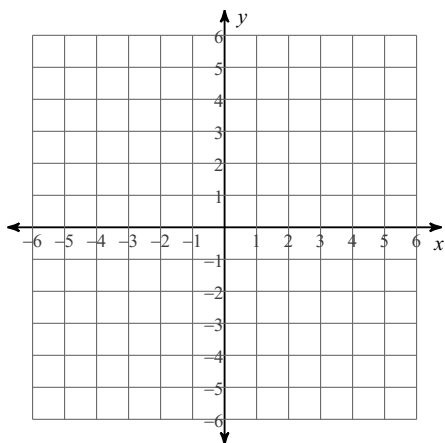
73) $8x - 3y = 12$



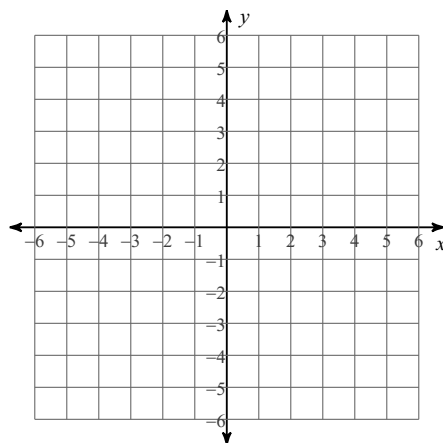
74) $3x + 4y = 12$



75) $7x + 2y = -4$



76) $5x - y = 5$



Simplify. Your answer should contain only positive exponents.

77) $\frac{(2^2)^4}{2^3 \cdot 2^2}$

78) $\frac{(2^3)^3 \cdot 2^2}{2^3}$

79) $\left(\frac{2^4 \cdot 2^2}{2^3}\right)^3$

80) $\frac{2}{(2^2)^3 \cdot 2^2}$

$$81) \left(\frac{2^4 \cdot 2^3}{2^3} \right)^4$$

$$82) \frac{4 \cdot 2^4}{(2^3)^3}$$

$$83) \frac{(2n^2)^2}{3n^2 \cdot n}$$

$$84) \frac{2r^2}{r^2 \cdot 2r}$$

$$85) \frac{3x^3 \cdot 2x^3}{x^2}$$

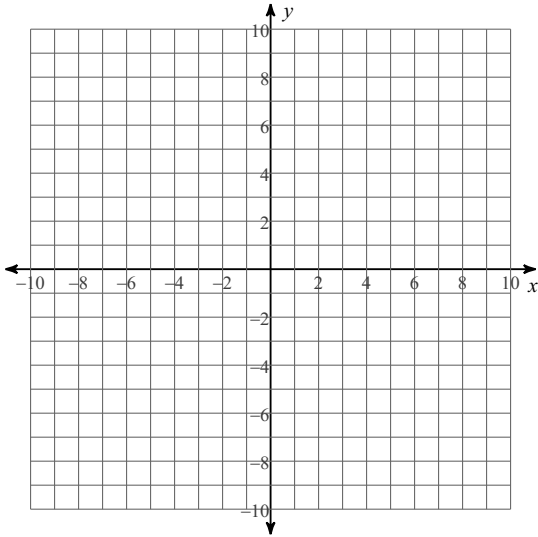
$$86) \frac{x^3}{x^2 \cdot 3x}$$

$$87) \left(\frac{2x \cdot 2x^2}{x} \right)^2$$

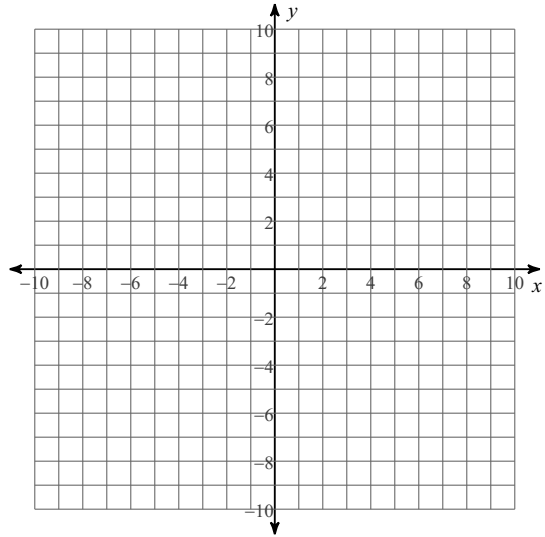
$$88) \frac{(3n^2)^2 \cdot n^2}{3n^3}$$

Solve each system by graphing. Graph both lines on the coordinate plane. Identify the point of intersection as an ordered pair.

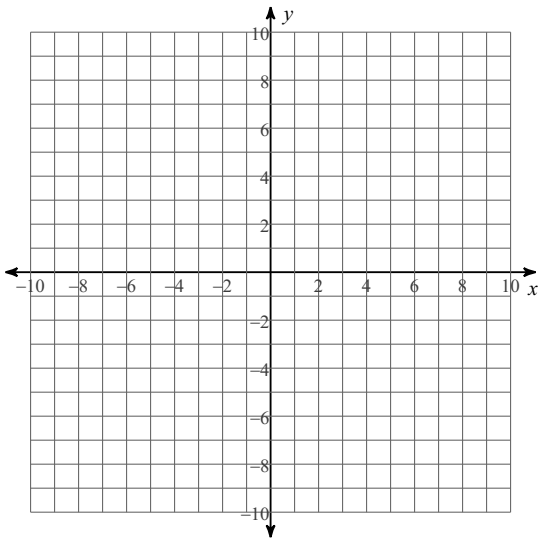
89) $x + y = -9$
 $13x - y = -5$



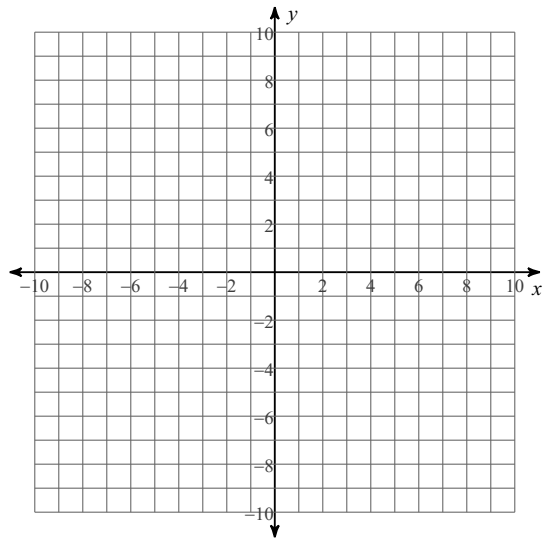
90) $6x - 7y = 14$
 $x - 7y = 49$



91) $2x + y = 8$
 $9x - 2y = 10$

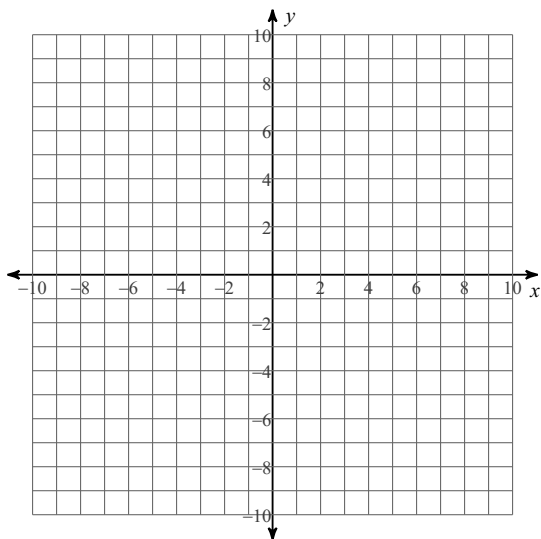


92) $x - 5y = -30$
 $12x + 5y = -35$



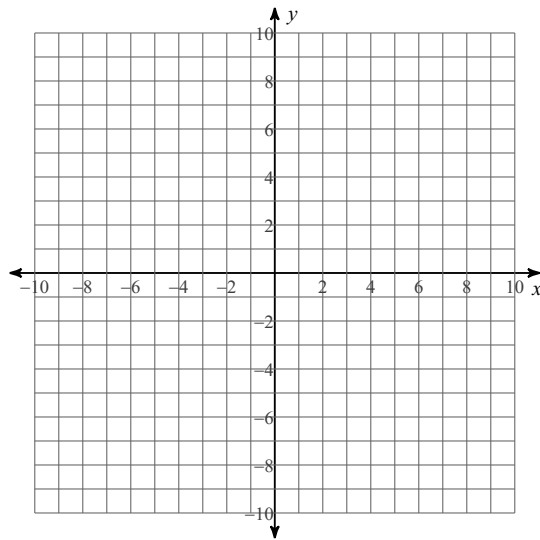
93) $y = 5$

$y = -\frac{10}{9}x - 5$



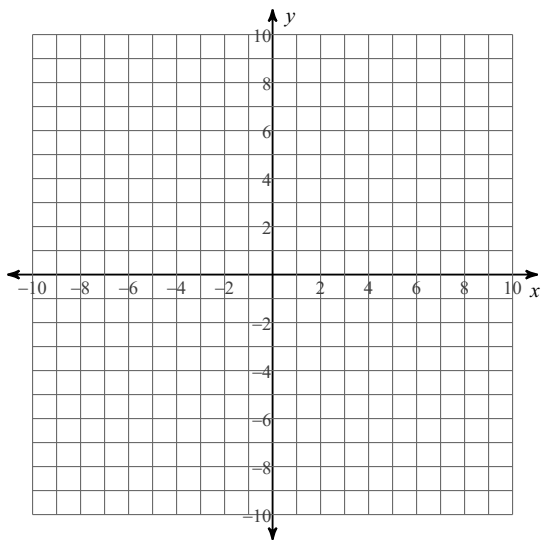
94) $y = \frac{7}{3}x - 9$

$y = -\frac{7}{3}x + 5$



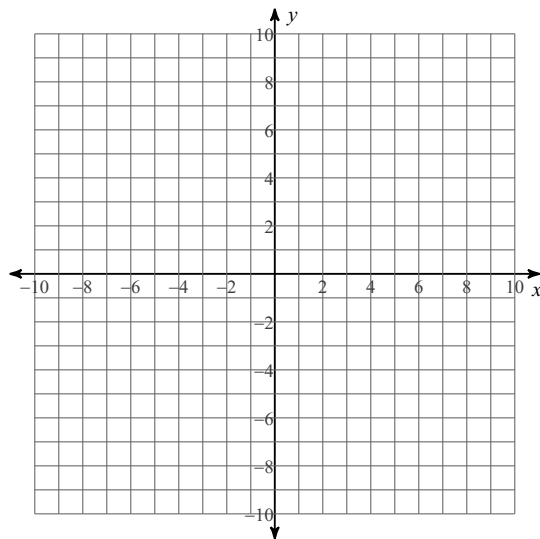
95) $y = \frac{1}{2}x - 3$

$y = -2x - 8$



96) $y = \frac{6}{5}x + 9$

$y = \frac{1}{5}x + 4$



Problem-Based Task #1 Rafting and Hiking Trip:

To celebrate graduation, you and 4 of your closest friends have decided to take a 5-day white-water rafting and hiking trip. During your 5-day trip, 2 days are spent rafting. If the rafting trip covers a distance of 60 miles and you are expected to raft 8 hours each day, how many miles must you raft each hour? For the hiking portion of your trip, you and your friends carry the same amount of equipment, which works out to 35 pounds of equipment each. For extra money, you can hire an assistant, who will carry 50 pounds of equipment. Each assistant charges a flat fee of \$50 and an additional \$22 for each mile. The total amount you would have to pay the assistant is \$512. How many miles will your group be hiking? Is it worth hiring two assistants to help you and your friends carry the equipment? Here are some questions to help guide you:

1. If the rafting trip covers a distance of 60 miles and you are expected to raft 8 hours each day, how many miles must you raft each hour?

2. What is the ratio of miles to days?

3. What is the ratio you are looking for?

4. What is the ratio of days to hours?

5. How do you convert the original ratio of miles to days into miles per hour?

6. How many miles will your group be hiking?

7. What is the equation of the cost of hiring an assistant?

8. What is the solution to this equation?

9. Is it worth hiring two assistants to help you and your friends carry the equipment? (This is your personal opinion.)

10. How much weight will each of you carry without assistants?

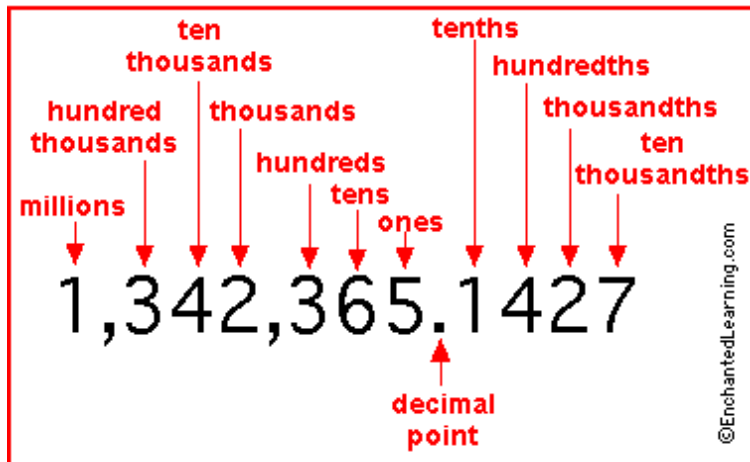
11. How much weight will each of you carry with two assistants?

12. What is the difference in the cost per day?

13. Are you willing to pay more money to have someone carry your equipment? Why? (This is your personal opinion.)

PLACE VALUE REVIEW

<http://www.enchantedlearning.com/math/decimals/placevalue/>



*You MUST know place value.
If you have trouble with this, go to the web site above to practice.*
