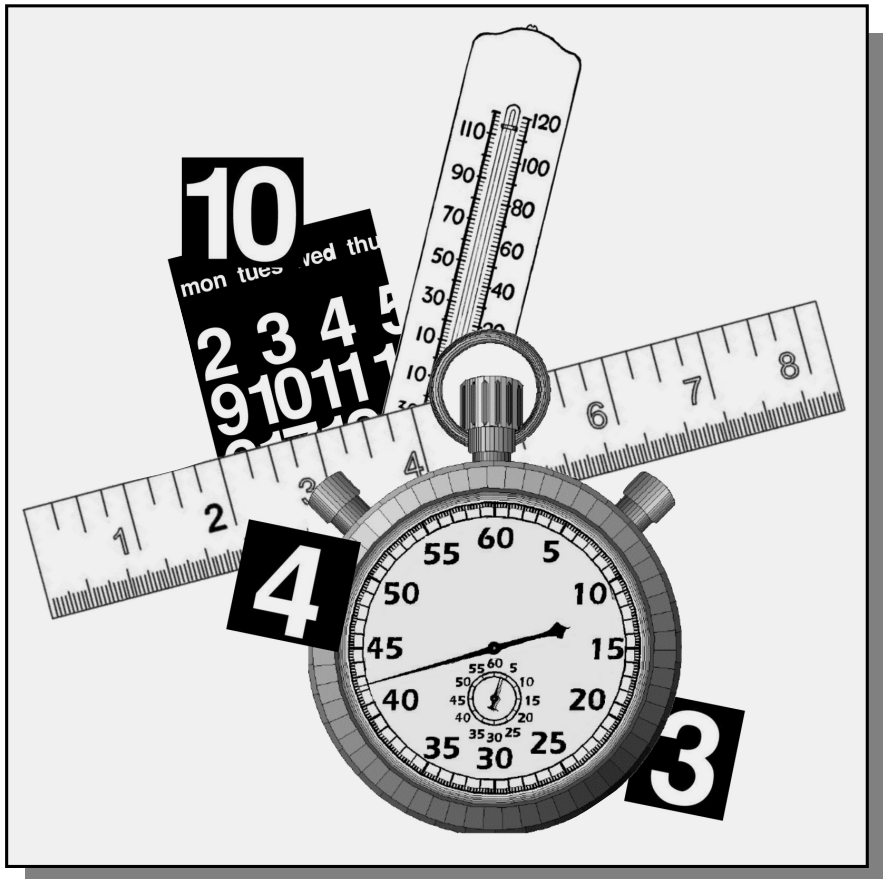
Intermediate Math Skills

Activities



Chapter 4

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Intermediate Math Skills

Chapter 4

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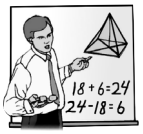
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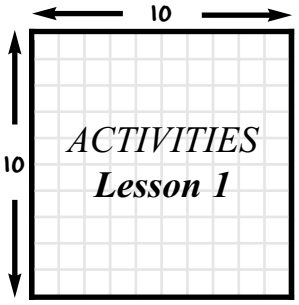
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Fundamentals

Real Numbers



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

Refer to Figure 1.1 to answer questions 1-4.

1. _____ numbers consists of two main groups of numbers, *irrational* and *rational*.

2. Figure 1.1 is a _____ diagram.

3. The two groups of numbers contained in the rational numbers are fractions and _____.

4. ***Integers*** consist of _____, zero and negative numbers.

5. ***Venn diagrams*** are a pictorial representation of _____ and _____.

6. Figure 1.2 is a diagram of a(n) _____ tree.

7. Figure 1.3 is a diagram of a "***family tree***" of _____.

8. A collection of objects is known as a(n) _____.

9. A collection of objects in which all the members of this collection are contained within another ***set*** is called a(n) _____.

10. Figure 1.3 shows the set of real numbers and its subsets as a _____ of numbers.

11. Rational numbers are those numbers that can be written as _____.

12. The root word for rational is _____.

13. A ratio can be written in _____ form.

14. _____ numbers are members of the set {1, 2, 3, 4, 5, 6 …}.

15. _____ numbers are members of the set {0, 1, 2, 3, 4, …}.

16. _____ are an extension of the set of whole numbers.

17. _____ are members of the set {…-3, -2, -1, 0, 1, 2, 3, …}.

18. _____ numbers cannot be expressed exactly in fraction or decimal form.

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19. Numbers such as $\sqrt{2}$, $\sqrt{3}$, $\sqrt{7}$ and π are examples of _____ numbers.

Refer to Example Set 1 to answer questions 20-22.

20. In a), 4 is a(n) _____ number, an integer, a(n) _____ number and a real number.

21. In b), -10 is a(n) _____, a rational number and a real number.

22. In c), $^1/_5$ is a(n) _____ number and a real number.

Name all the sets of numbers that include the number shown in each question. Write the correct set(s) on the blank. (Real, Rational, Integers, Whole numbers)

23. -3 _____

24. 7 _____

25. $^2/_5$ _____

26. $-^8/_9$ _____

27. 35 _____

28. -19 _____

29. 234 _____

30. $^{41}/_{50}$ _____

Refer to Example Set 2 to answer questions 31-40.

In a)

31. $^{25}/_5$ = _____

32. $^{25}/_5$ is a(n) _____ integer because the fraction reduces to a(n) _____ number.

33. $^{25}/_5$ is a real number, a(n) _____ number, an integer and a whole number.

In b)

34. $-^{81}/_9$ is a(n) _____ integer.

35. $-^{81}/_9$ is a member of the sets of _____ numbers, integers, rational numbers and whole numbers.

36. $-^{81}/_9$ is an integer because the fraction reduces to _____.

In c)

37. $^2/_{27}$ is a(n) _____ number and a real number.

In d)

38. $\sqrt{11}$ is a(n) _____ number.

39. $\sqrt{11}$ cannot be expressed exactly as a(n) _____ or a(n) _____ or terminating decimal.

In e)

40. $\sqrt{17}$ is a(n) _____ number.

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Refer to Example Set 2 to answer questions 41-49. Write all the answers on the blank that name each number. (Real, Rational, Integers, Whole or Irrational)

41. $\sqrt{21}$ _____

42. $-\frac{16}{2}$ _____

43. $\frac{100}{10}$ _____

44. $\sqrt{2}$ _____

45. $\frac{9}{3}$ _____

46. $-\frac{27}{3}$ _____

47. $\frac{1}{3}$ _____

48. $\sqrt{5}$ _____

49. $\frac{4}{7}$ _____

50. Write the **Life Principle**: "_____
_____."

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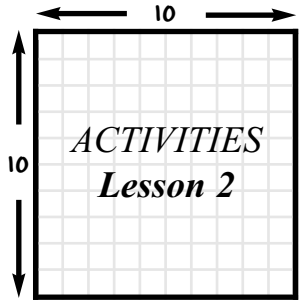
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Radicals

Rational Thinking



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. $\frac{x}{0}$ = _____

2. The denominator of a fraction cannot be _____.

3. An answer is not in proper form if the denominator contains a number written in _____ form.

4. The denominator of the fraction must be a(n) _____ number.

5. $\frac{7}{\sqrt{9}} = \frac{7}{____} = \frac{7}{____}$

6. This lesson is about the mathematical operation of _____ the denominator.

Refer to Example Set 1 to answer questions 7-17.

7. The numerical expression to be ***evaluated*** is written in _____ form.

8. The numerator and denominator must be evaluated _____.

9. The evaluation of the numerator is accomplished _____.

10. You must use PEMDAS, going to the innermost set of symbols ( ) _____ and working your way outward.

11. 5[3 + 2(4 - 1)] = 5[3 + 2(_____)]

12. 5[3 + _____] = 5[9]

13. 5[3 + 2(4 - 1)] = _____ (Final answer)

14. $2[\sqrt{2}\ (5-2)] = 2[\sqrt{2}(_____)]$

15. $(2 \bullet 3)\sqrt{2}$ = _____

16. $\frac{45}{6\sqrt{2}}$ = _____

17. The denominator must be _____.

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Refer to Example Set 2 to answer questions 18-21.

18. In Step 1, $\frac{15}{2\sqrt{2}} \bullet \frac{\quad}{\sqrt{2}}$.

19. In this step we have _____ the numerator and _____ by the same number which is _____.

20. In Steps 2 and 3, $\sqrt{2} \bullet \sqrt{2} =$ _____.

21. $\frac{15}{2\sqrt{2}} =$ _____ (Final answer)

Refer to Example Set 3 to answer questions 22-31.

22. The square root of three is a multiplier of both _____ and _____.

23. Professor K uses the rules for _____ fractions and obtains the answer with a(n) _____ denominator.

24. In a), $\frac{25}{\sqrt{3}} \bullet$ _____.

25. In a), $\sqrt{3} \bullet \sqrt{3} =$ _____.

26. In a), $\frac{25}{\sqrt{3}} =$ _____ (final answer).

27. In b) the $\sqrt{7}$ was chosen as a _____ of both numerator and _____.

28. In b) the radical ($\sqrt{7}$) was chosen from the denominator, rather than from the _____.

29. In b), $\frac{\sqrt{5}}{\sqrt{7}} \bullet$ _____.

30. In b), $\sqrt{7} \bullet \sqrt{7} =$ _____.

31. In b), $\frac{\sqrt{5}}{\sqrt{7}} \bullet$ _____ (final answer).

Use the rule for multiplying radicals to answer questions 32-36.

32. $4\sqrt{2} \bullet 3\sqrt{5} = (_____ \bullet 3)\sqrt{2 \bullet 5}$

33. $\sqrt{2} \bullet \sqrt{5} =$ _____

34. $\sqrt{3} \bullet \sqrt{11} =$ _____

35. $2\sqrt{3} \bullet 4\sqrt{5} \bullet 3\sqrt{7} = (2 \bullet _____ \bullet 3)\sqrt{3 \bullet 5 \bullet 7} = 24\sqrt{105}$

36. $\sqrt{3} \bullet \sqrt{7} \bullet \sqrt{7} =$ _____

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Simplify the following. Rationalize the denominator of the answer when necessary. Use the space provided to show your work and write your answer on the blank. Refer to the examples as necessary.

37. $\frac{4}{\sqrt{3}} =$ _____

(a) 4 (b) $4/3$ (c) $\frac{4\sqrt{3}}{3}$ (d) $\frac{3\sqrt{3}}{4}$

38. $\frac{7}{\sqrt{7}} =$ _____

(a) 7 (b) $\sqrt{7}$ (c) $7\sqrt{7}$ (d) $\frac{7\sqrt{7}}{49}$

39. $\frac{12}{\sqrt{3}} =$ _____

40. $\frac{3}{\sqrt{2}} =$ _____

41. $\frac{2[3(8+3)]}{11\sqrt{2}} = \frac{2[3(8+3)]}{11\sqrt{2}} \bullet \frac{\sqrt{2}}{\sqrt{2}} =$ _____

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42. $\frac{2(5+3)+8}{2\sqrt{3}} = \frac{2(8)+8}{2\sqrt{3}} \bullet \frac{\sqrt{3}}{\sqrt{3}} =$ _____

43. $\frac{7(9-6)+5}{13\sqrt{11}} =$ _____

44. $\frac{4(8-3)-15}{\sqrt{5}} =$ _____

(a) $\sqrt{5}$ (b) $5\sqrt{5}$ (c) 5 (d) $\frac{\sqrt{5}}{25}$

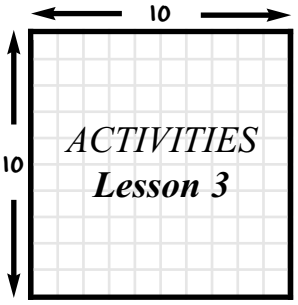
45. Write the **Life Principle**: "_____
_____."

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Inequalities

Less than, Greater than



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The concept of ***greater than*** or ***less than*** can best be understood by looking at a _____.

2. The value of one number can be _____ *than* or *less than* another number.

3. _____ can be *greater than* or *less than* another mathematical expression.

4. A mathematical statement containing a *greater than* or *less than* symbol is called a(n) _____.

Refer to Example Set 1 to answer questions 5-8.

5. In a), 3 is less than 5 because 3 is to the _____ of 5 on the number line.

6. In b), 45 is to the left of 50 on the number line, therefore, 45 is _____ than 50.

7. In e), 8 is to the _____ of 3 on the number line, therefore, 8 is greater than 3.

8. In f), 100 is greater than 99, because 100 is to the _____ of 99 on the number line.

Refer to Example Set 2 to answer questions 9-12.

9. Professor K considered the ***inequality*** statement as a statement of _____ to determine the starting point of the graph.

10. _____ is the mathematical symbol for *greater than*.

11. In Step 1, Professor K used a(n) _____ circle to mark the location of the beginning point.

12. In Step 2, the darkened arrow points to the _____ in the direction of the solutions to $x > 2$.

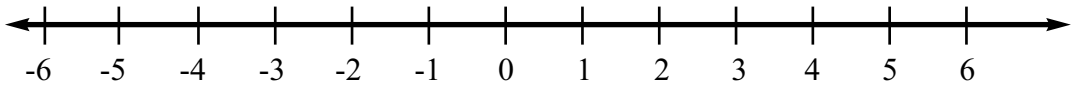
Refer to Example Set 3 to answer questions 13-14.

13. In Step 1, the ***open circle*** is placed at what starting point? _____ .

14. In Step 2, the darkened arrow points to the _____ in the direction of x.

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15. Graph the solution to $x < -1$ on the number line below.



16. A(n) _____ circle is used to mark the beginning point of a *greater than* or *less than* statement in which the endpoint of the graph is not included.

17. (Remember, a(n) _____ is a mathematical statement containing a *greater than* or *less than* symbol.)

Refer to Example Set 4 to answer questions 18-21.

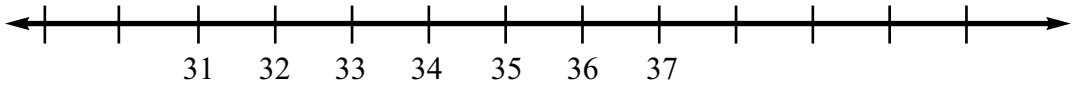
18. _____ represents Amanda's age.

19. $x >$ _____ represents all of Amanda's possible ages.

20. _____ is the starting point of the graph, marked with an open circle.

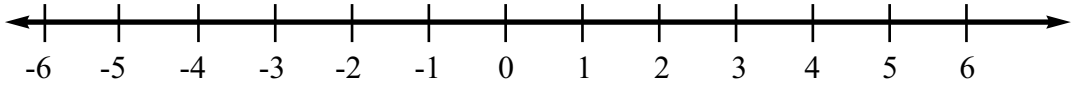
21. The darkened arrow points to the _____.

22. Graph the solution to $x > 33$ on the number line below.

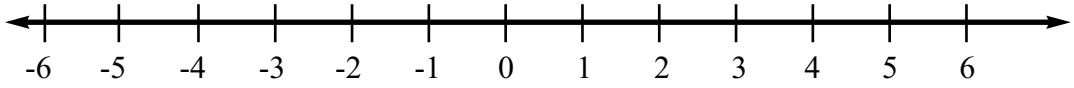


Graph the following inequalities on the number line provided or choose the correct graph.

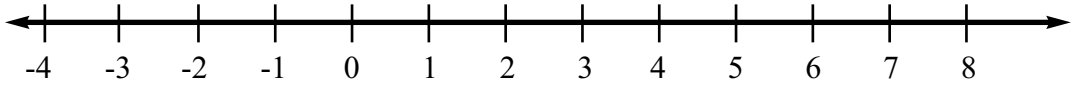
23. $x > 2$



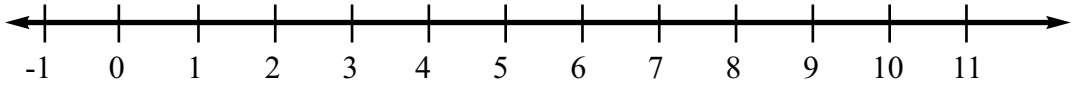
24. $x < 8$



25. $x < 7$

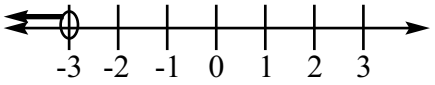


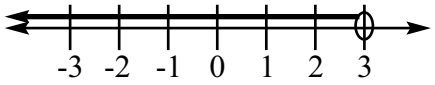
26. $x < 10$

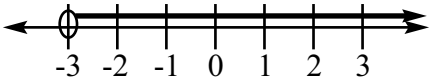


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27. $x > -3$ _____

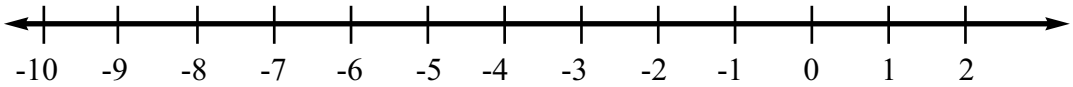
(a) 

(c) 

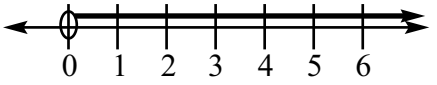
(b) 

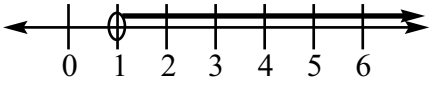
(d) not shown

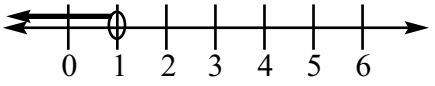
28. $x < -7$ _____

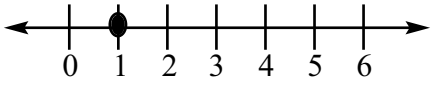


29. $x > 1$ _____

(a) 

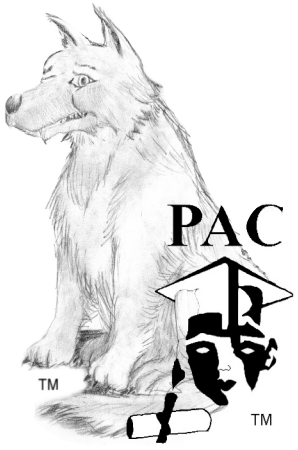
(c) 

(b) 

(d) 

30. Write the **Life Principle**: "_____
_____."

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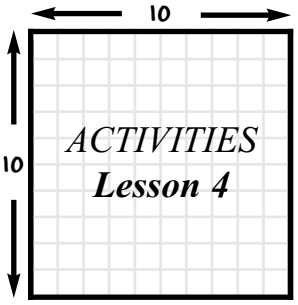
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Date: _____ Grade: _____



Inequalities

Less or Equal or Greater



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Mathematical expressions can contain *greater than or* _____ and *less than or equal to* ***inequality*** symbols.

Refer to Example Set 1 to answer questions 2-5.

2. A(n) _____ circle is used to mark the beginning point of a *greater than or equal to* inequality statement.

3. In Step 1, the ***darkened circle*** is placed on the starting point, _____.

4. In Step 2, the darkened arrow points to the _____.

5. The solutions to $x \geq 2$, include 2 and are to the _____ of 2.

Refer to Example Set 2 to answer questions 6-8.

6. In Step 1, the beginning point of the graph of the solution to $x \leq -1$ is _____.

7. In Step 2, the darkened arrow points to the _____.

8. Is -5 a solution (answer or value of x) to $x \leq -1$? Yes _____ No _____

9. _____ is the symbol for *less than or equal to*.

10. _____ is the symbol for *greater than or equal to*.

Refer to Example Set 3 to answer questions 11-15.

11. Timothy's sister is _____ years old.

12. Timothy could be the _____ age as his sister.

13. In Step 1, a darkened circle is placed at _____, the starting point of the graph.

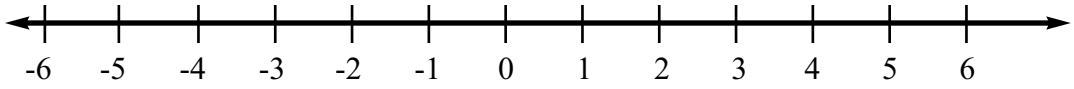
14. In Step 2, the darkened arrow points to the _____.

15. Could Timothy be 30 years of age? Yes _____ No _____

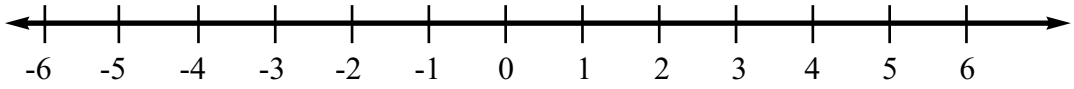
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Graph the following inequalities on the number lines provided.

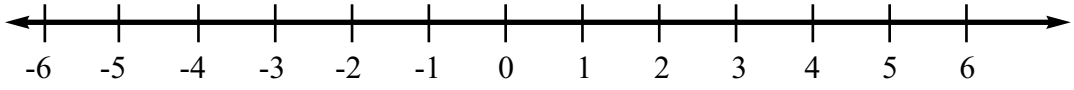
16. $x \leq 6$



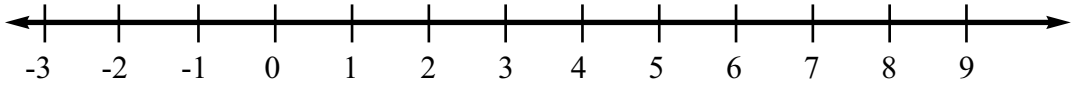
17. $x \geq 3$



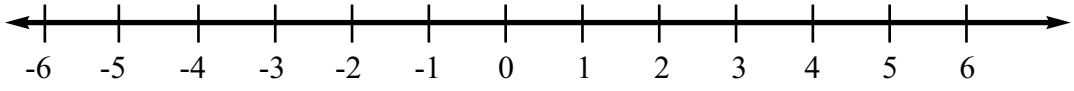
18. $x \geq 0$



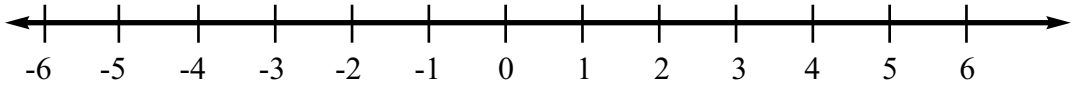
19. $x \leq 8$



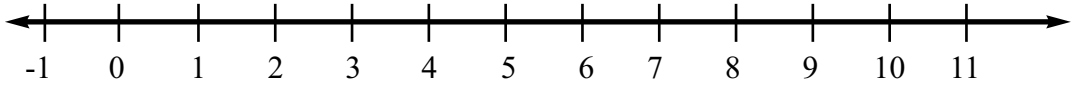
20. $x \leq 2$



21. $x \geq 1$

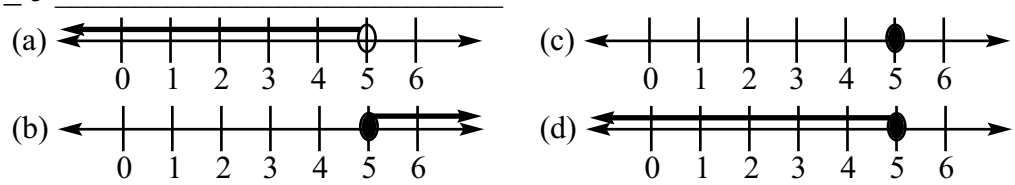


22. $x \leq 10$



Choose the correct graph. (23-24)

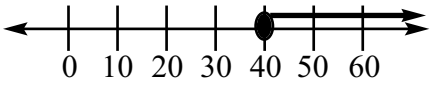
23. $x \leq 5$ _____

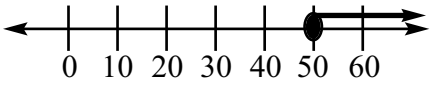


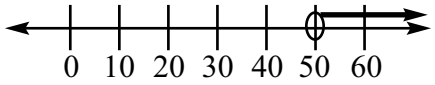
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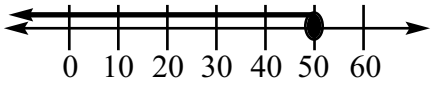
24. John has the same or more money than does Tommy. Choose the graph of the number line below that represents how much money John could have if Tommy has $50.00.

_____

(a) 

(c) 

(b) 

(d) 

25. Write the **Life Principle**: "_____
_____."

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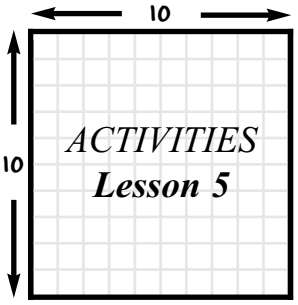
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Date: _____ Grade: _____



Inequalities

Greater or Less Than



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The same operation _____ be performed on both sides of the equation to keep the equality of the mathematical expressions.

2. The same intermediate rules apply in statements of ***inequalities*** as in statements of _____.

3. Whatever operation is performed on one side of the inequality symbol, the same operation _____ be performed on the other side.

4. Read the rule. The same operation must be performed on both sides of the inequality symbol to maintain the _____ of the inequality statement.

Refer to Example Set 1 to answer questions 5-12.

5. Professor K considers the inequality statement as a statement of _____ to emphasize the procedure of solving for the unknown.

6. _____ is the mathematical symbol for *greater than*.

7. Professor K divided both sides by _____ to isolate the x on one side of the equation.

8. $2x \div 2 =$ _____.

9. $4 \div 2 =$ _____.

10. $2x > 4 \rightarrow x >$ _____.

11. A(n) _____ circle is placed on the two to mark the starting point of the solution on the graph.

12. The darkened arrow points to the _____ to show the location of the possible solutions to $2x > 4$.

Refer to Example Set 2 to answer questions 13-16.

13. _____ is the mathematical symbol for *less than*.

14. In Step 1, $4x + 5 < 25 \rightarrow 4x + 5 -$ _____ $< 25 -$ _____.

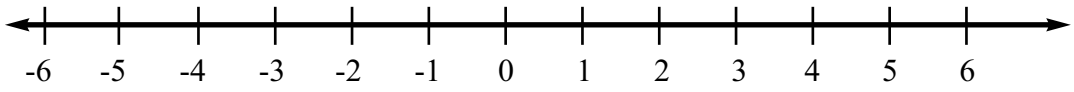
15. In Step 2, $4x < 20 \rightarrow 4x \div$ _____ $< 20 \div$ _____.

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16. In Step 3, $4x + 5 < 25 \rightarrow x <$ _____.

17. An _____ circle is placed on the starting point of the graph of the solution to $4x + 5 < 25$.

18. Graph the solution to $4x + 5 < 25$ on the number line below.



19. A(n) _____ circle is the symbol used to mark the beginning point of the graph of the solution of a greater than statement on a number line.

20. A(n) _____ circle is the symbol used to mark the beginning point of the graph of the solution of a less than statement on a number line.

21. When the endpoint is not included in the graph of the solution a(n) _____ circle is used.

Refer to Example Set 3 to answer questions 22-27.

22. _____ represents Sally's age now.

23. $x +$ _____ represents Sally's age four years from now.

24. Sally's brother's age in four years will be _____.

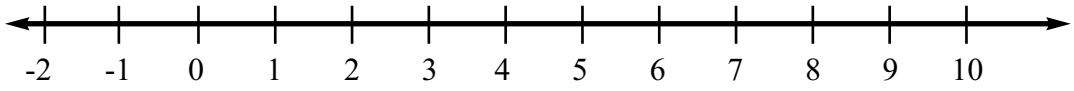
25. Sally's brother is _____ years old now.

26. In Step 2, Professor K _____ four from both sides of the inequality to isolate the x on the lhs of the inequality symbol.

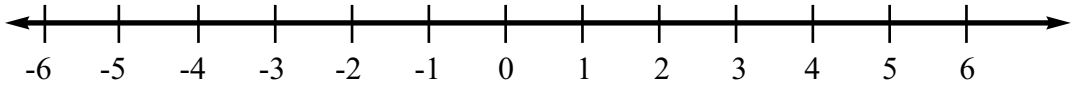
27. In Step 2, $x > 30$ means that Sally must be more than _____ years old at this time.

Graph the following inequalities on the number line.

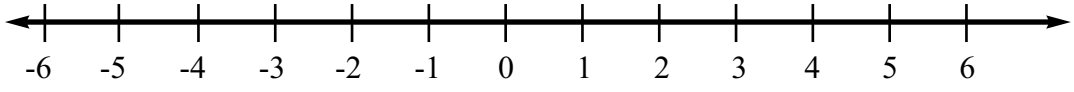
28. $5x + 1 > 46$



29. $2x + 9 < 21$

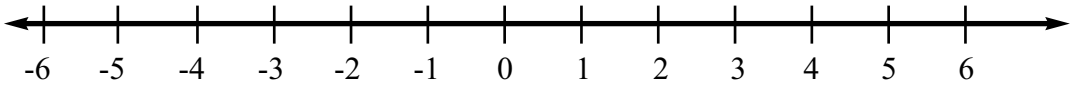


30. $45x - 15 > 30$

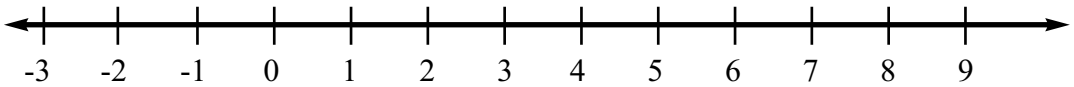


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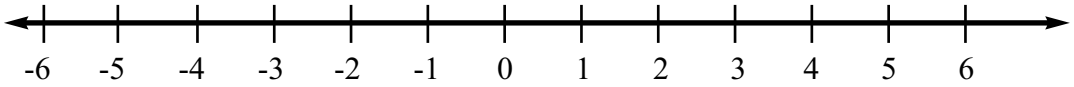
31. $x + 5 < 10$



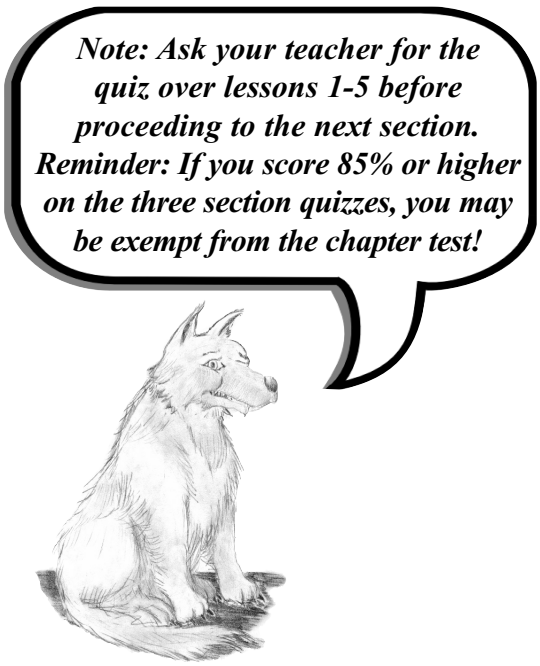
32. $6x + 8 > 56$



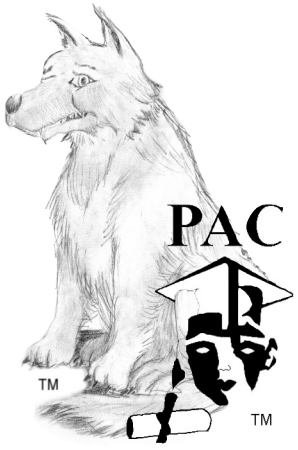
33. $3x + 11 < 20$



34. Write the **Life Principle**: "_____
_____."



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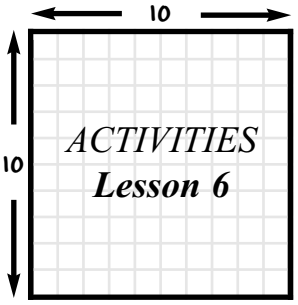


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Inequalities

More Inequalities



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Many statements of inequality can also contain statements of _____.

2. Such statements are really "_____" statements.

3. Values of numbers are either _____ to another number or the value of the number is greater than or less than another number.

4. _____ and ***logic*** will tell you that something cannot be equal and unequal at the same time.

5. In a statement of inequality, even an inequality containing an equal-to statement, the _____ basic rules apply as in statements of equality.

6. Whatever operation is performed on one side of the inequality symbol, the _____ operation must be performed on the other side.

Refer to Example Set 1 to answer questions 7-10.

7. _____ is the symbol for *greater than or equal to*.

8. In Step 2, both sides of the inequality, $4x \geq 8$ were divided by _____. Write this inequality step in mathematical terms: _____.

9. In Step 3, The resulting inequality was determined to be $x \geq$ _____.

10. A darkened circle is the mathematical symbol on a graph for _____ *than or equal to* and *less than or equal to*.

Refer to Example Set 2 to answer questions 11-14.

11. _____ is the symbol for *less than or equal to*.

12. In Step 2, Professor K subtracted _____ from both sides of the inequality symbol. Write this inequality step in math terms: _____.

13. In Step 3, Professor K _____ both sides by seven. Write this step in math terms: _____.

14. The values of x are either equal to seven or extend to the _____ of seven on the number line.

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Refer to Example Set 3 to answer questions 15-20.

15. _____ has $110.00 in his savings account.

16. x represents the balance of _____ savings account now.

17. $x + 50$ shows the balance of John's savings account _____.

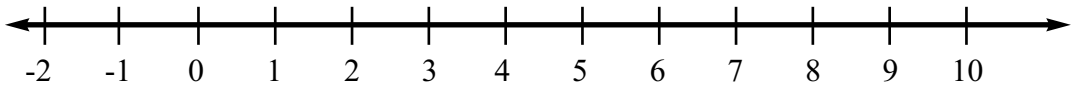
18. $x + 50 \geq 110$ shows that the balance of John's savings account after adding fifty dollars is _____ *than or equal to* the balance of Jose's savings account.

19. In Step 2, Professor K subtracts _____ from both sides of the inequality symbol.

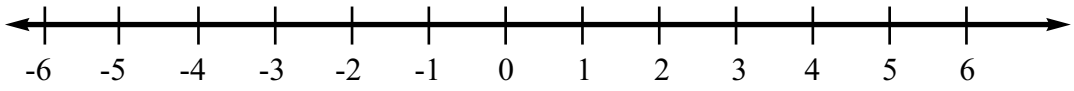
20. The balance of John's savings account must be *greater than or equal to* $_____.

In the following inequalities, solve for *x* in the spaces provided and graph the solution on the number line.

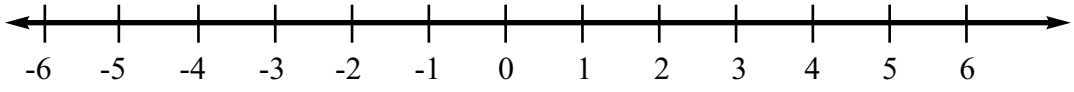
21. $2x - 6 \leq 12$



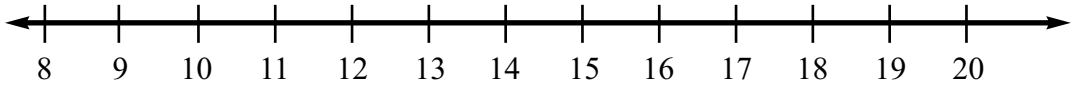
22. $4x + 5 \geq 25$



23. $3x - 7 \leq 2x - 10$ (Remember to subtract $2x$ from both sides and then add seven to both sides.)



24. In 5 years, Charles will be at least as old as Tommy. Tommy will be 20 years old at that time. Charles' age right now is *greater than or equal to* _____.

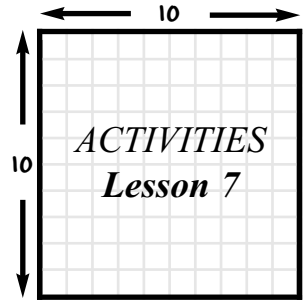


25. Write the **Life Principle**: "_____
_____."

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Name: _____

Date: _____ Grade: _____




Inequalities

Special Rule; Inequalities

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Professor K remembered a(n) _____ rule associated with working inequality problems.

2. Often, ***special rules*** are placed on citizens in times of _____ or terrorist activity.

3. In a statement of inequality, the same basic rules apply as in a statement of _____.

4. Whatever operation is performed on one side of the inequality symbol, the _____ operation must be performed on the other side.

5. When an inequality is multiplied or divided by a(n) _____ number, the inequality symbol must be _____.

Refer to Example Set 1 to answer questions 6-10.

6. Translate $-3x \geq 12$ into words.

_____

7. Professor K divides both sides of the inequality, $-3x \geq 12$, by negative _____ to obtain the inequality, $x \geq -4$.

8. Professor K checked his solution by substituting the number, _____, (which is greater than -4) into the inequality and performed the calculations.

9. Professor K determined, through checking, that his solution was _____.

10. Professor K _____ the inequality symbol to obtain the correct solution, $x \leq -4$.

11. You should always check your solution by using the _____ statement of inequality.

12. You should check your solution to be sure that you _____ the symbol correctly.

Refer to Example Set 2 to answer questions 13-16.

13. Professor K begins to isolate the x on the lhs of the inequality, $-8x - 3 \leq 69$, by adding a _____ to both sides.

14. Professor K then _____ both sides by _____.

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15. Professor K _____ the inequality symbol because he divided by a negative number.

16. Professor K checked his solution by substituting _____ (a number greater than negative nine) into the inequality.

Refer to Example Set 3 to answer questions 17-20.

17. Professor K begins to solve the inequality, $\frac{5x}{-3} + 4 > 14$, by subtracting _____ from both sides.

18. After performing the calculations, Professor K then _____ both sides by -3.

19. After obtaining the statement, $5x < -30$, Professor K _____ both sides by 5 to isolate the x on the lhs.

20. _____ is the final solution to $\frac{5x}{-3} + 4 > 14$.

Refer to the examples in this lesson to help you solve the following inequalities for *x*. Be sure to change the direction of the inequality symbol when you multiply or divide by a negative number. Show your work.

21. $-6x < 36$ _____

22. $-4x - 7 > 21$ _____

23. $\frac{-2x}{3} \leq 12$ (The symbol is reversed when multiplying or dividing by a negative number, even in combination with an equality statement.) _____

24. $\frac{50x}{-4} > 200$ _____

(a) $x > -16$ (b) $x > 16$ (c) $x < 16$ (d) $x < -16$

25. $x(8 - 4) < 16$ (Remember to use PEMDAS rule first.) _____

(a) $x > 4$ (b) $x < 4$ (c) $x < 64$ (d) $x > 64$

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26. $\frac{2[3(4-1)+2]x}{-4} > 11$ (Remember to use PEMDAS rule first.) _____

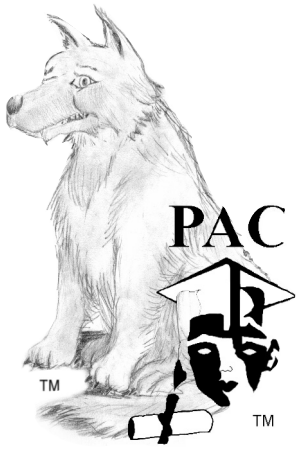
27. $\frac{3[2+(6-2)-8]x}{2} < 4(8-5)$ _____

28. $-4x - 3(5 - 3) > 26$ _____

29. $\frac{-5x}{5[2(7-6)]} \geq \frac{5(5-1)}{2(12-2)}$ _____

30. Write the **Life Principle**: "_____
_____."

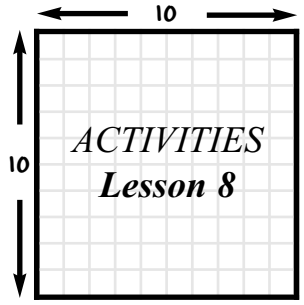
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Inequalities

Intervals

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Often an unknown is greater than one number while at the same time _____ than another number.

2. When the value of an unknown is then between the two numbers this is called a(n) _____.

3. A(n) _____ is a set of numbers defined by an inequality statement.

Refer to Example Set 1 to answer questions 4-7. Write the correct answer on the blank that describes the interval.

4. $5 < x < 9$ Interval _____
(a) open (b) closed (c) half-open

5. $x < 3$ Interval _____
(a) open (b) closed (c) half-open

6. $2 \leq x < 6$ Interval _____
(a) open (b) closed (c) half-open

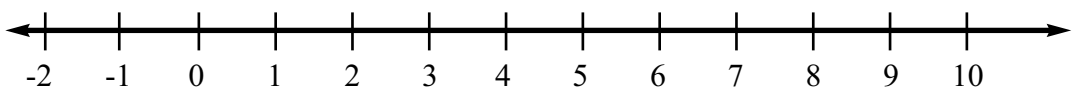
7. $x \geq 1$ Interval _____
(a) open (b) closed (c) half-open

8. An ***interval*** that does not include at least one end point or one end point does not exist (one end does not have a stopping point is called a(n) _____ interval.

9. An interval in which both end points are included is called a(n) _____ interval.

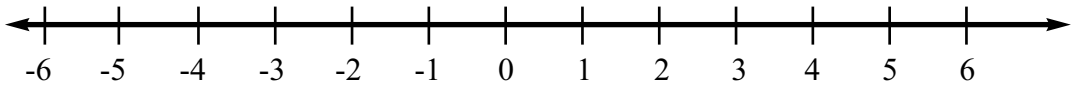
Graph the following inequalities defined by the interval given in each question. (Refer to Example Set 1.)

10. $4 < x < 7$

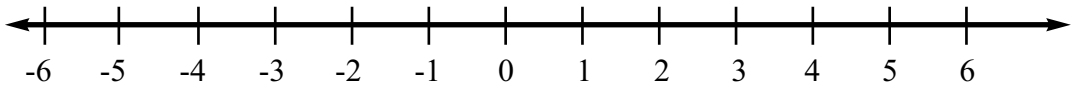


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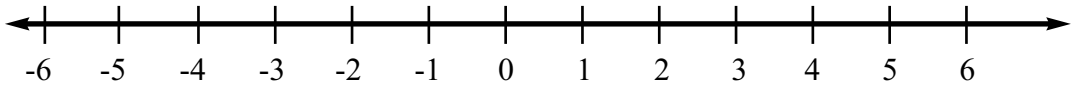
11. $x < 5$



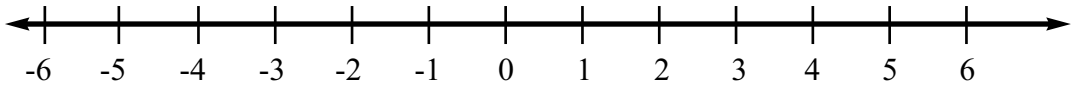
12. $1 < x < 4$



13. $0 \leq x \leq 3$



14. $x \geq 2$



Refer to Example Set 2 to determine if the interval shown is an open, half-open or closed interval.

15. $5 > x$ _____

16. $3x \leq 9$ _____

17. $65 \leq 14x \leq 90$ _____

18. $225 > 25x > 1500$ _____

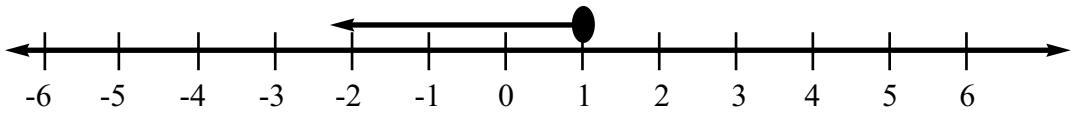
19. $-40 \geq 4x > -64$ _____

20. $24 \geq x + 8 \geq 300$ _____

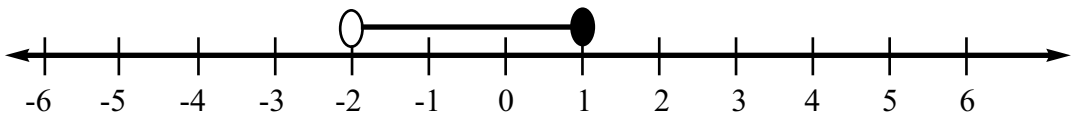
21. $-4 < -8x - 6 \leq 71$ _____

Refer to Example Set 3 to determine if the graph of the interval shown is an open, half-open or closed interval.

22. _____

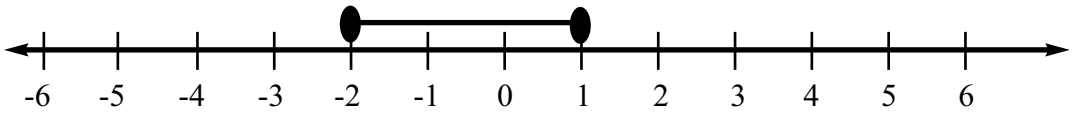


23. _____



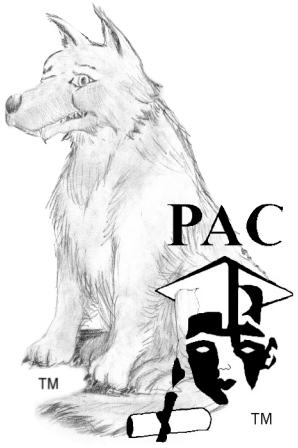
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24. _____



25. Write the **Life Principle**: "_____
_____."

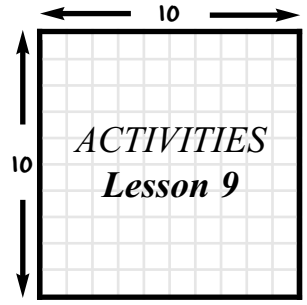
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Inequalities

Set Builders

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The elements of a set are placed in _____, {1, 2, 3, 4}.

2. An interval is also a(n) _____ of numbers.

3. Two methods exist in mathematics to indicate an interval, _____ notation and _____ notation.

4. ***Set-builder notation*** places the inequality statement within _____ brackets.

Refer to Figure 9.1 to fill in the blanks in the chart below. (5-7)

Statement of inequality	Set-builder notation	How to translate notation
$x > 5$	$\{x \mid x > 5\}$	all x, such that (|), the value of x is greater than five
$2 \leq x \leq 3$	**5.** _____	all x, such that (|), two is *less than or equal* to the value of x and x is *less than or equal* to three
$x \leq 10$	$\{x \mid x \leq 10\}$	**6.** _____ _____ _____
$4 \leq x < 7$	**7.** _____	all x, such that (|), four is *less than or equal to* the value of x and x is less than seven

8. $\{x \mid x < 8\}$ is an example of _____ notation.

9. _____ notation is a mathematical method of expressing an interval (as seen on a number line) in curly brackets.

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Refer to Example Set 1 to answer questions 10-12.

10. From a), write $5 < x < 9$ in set-builder notation. _____

11. From b), write $x < 3$ in set-builder notation. _____

12. From c), write $2 \leq x \leq 5$ in set-builder. _____

Refer to Example Set 2 to answer questions 13-16.

13. Write $\{x \mid 15 > x > -5\}$ in words. _____

_____

14. Write the following in set-builder notation: all x such that -2 is less than x and x is less than 8. _____

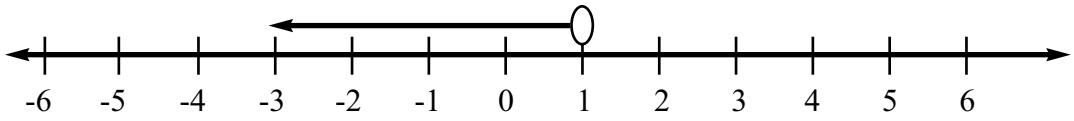
15. Write $\{x \mid 5 \leq x \leq 50\}$ in words. _____

_____

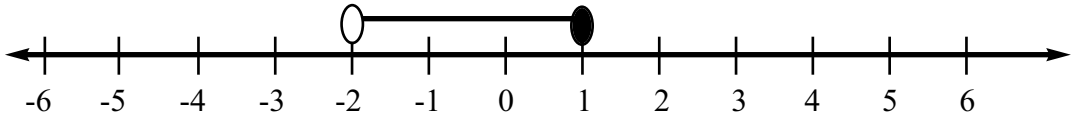
16. Write the following in set-builder notation: all x such that -6 is less than x and x is *less than or equal to* 6. _____

Refer to Example Set 3 to answer questions 17-20. Look at the graphs and express the interval shown in set-builder notation.

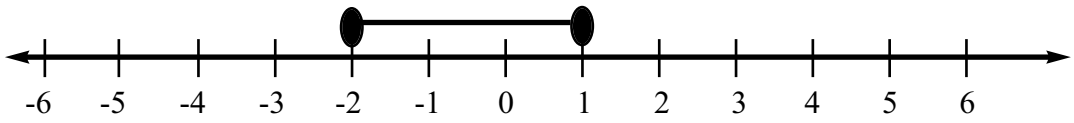
17. _____



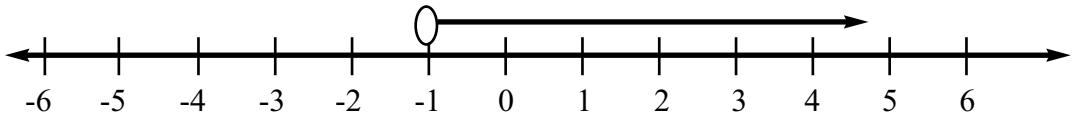
18. _____



19. _____



20. _____



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Express the following in set-builder notation. (21-24)

21. $x \geq 5$ _____

(a) $\{x \mid x \leq 5\}$ (b) $\{x \mid 5 \geq x\}$ (c) $\{x \mid x > 5\}$ (d) $\{x \mid x \geq 5\}$

22. $-16 \leq x \leq 20$ _____

23. $x < 7$ _____

24. $-2 \leq x < 2$_____

(a) $\{x \mid -2 > x \geq 2\}$ (b) $\{x \mid -2 \geq x \geq 2\}$ (c) $\{x \mid -2 \geq x > 2\}$ (d) $\{x \mid -2 \leq x < 2\}$

25. Write the **Life Principle**: "_____
_____."

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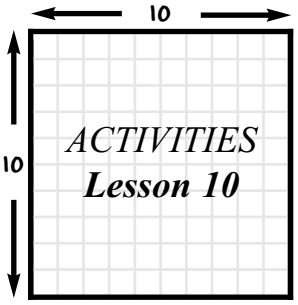
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Inequalities

Interval Notation



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The elements of a set are placed in _____ brackets in set-builder notation.

2. The symbols used in interval notation are the parenthesis and the _____.

3. Two methods exist in mathematics to indicate an interval: _____ notation and _____ notation.

4. Set-builder notation places the _____ statement within curly brackets.

Refer to Figure 10.1 to fill in the blanks in the chart below (5-9).

Statement of inequality	Set-builder notation	Notation Translation	Interval notation
$x > 5$	$\{x \mid x > 5\}$	all x, such that (|), the value of x is greater than five	**5.** _____
$2 \leq x \leq 3$	**6.** _____	all x, such that (|), two is *less than or equal to* the value of x and x is *less than or equal to* three	[2, 3]
$x \leq 10$	$\{x \mid x \leq 10\}$	**7.** _____ _____ _____	$(-\infty, 10]$
$4 \leq x < 7$	**8.** _____	all x, such that (|), four is *less than or equal to* the value of x and x is less than seven	**9.** _____

10. The ***infinity symbol*** looks like a sideways _____.

11. To continue on ***indefinitely*** to the left on a number line or in the negative direction would be shown with the symbol _____.

12. $\{x \mid x < 8\}$ is an example of _____ notation.

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13. [9, 15] is an example of _____ notation.

Refer to Example Set 1 to answer questions 14-16.

14. Write $5 < x < 9$ in set-builder notation. _____

15. Write $x < 3$ in ***interval notation***. _____

16. Write $2 \leq x \leq 5$ in set-builder and interval notation. _____, _____

17. Write $2 \leq x < 6$ in interval notation. _____

Refer to Example Set 2 to answer questions 18-21.

18. Write $\{x \mid 15 > x > -5\}$ in words.

_____

19. Write the following in set-builder notation: all x such that -2 is less than x and x is less than 8. _____

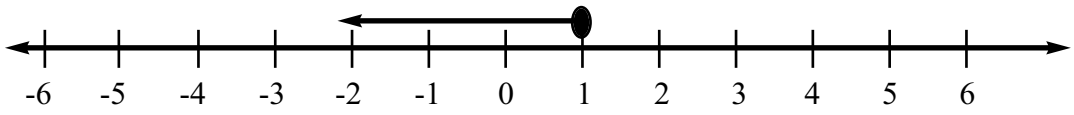
20. Write $\{x \mid 5 \leq x \leq 50\}$ in words.

_____

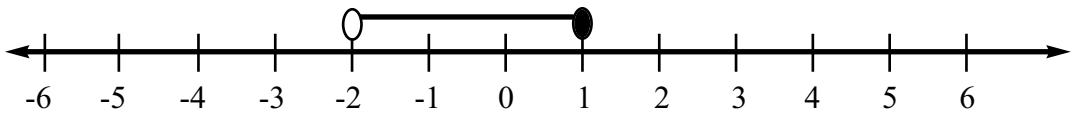
21. Write the following in interval notation: all x such that -6 is less than x and x is *less than or equal to* 6. _____

Refer to Example Set 3 to answer questions 22-25. Look at the graphs and express the intervals shown in interval notation.

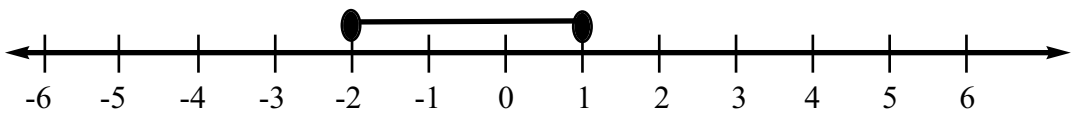
22. _____



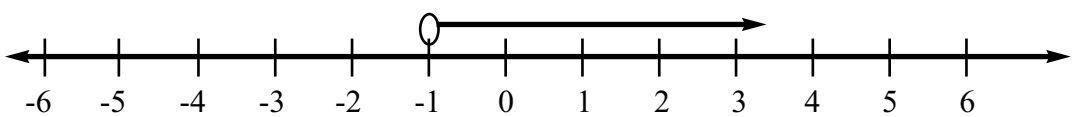
23. _____



24. _____



25. _____



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Express the following in interval notation. (26-29)

26. $x \geq 5$ _____

27. $-16 \leq x \leq 20$ _____

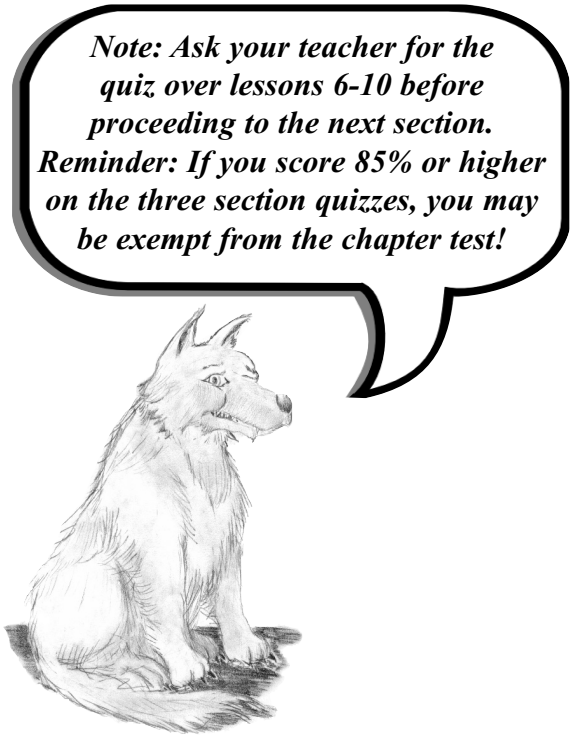
28. $x < 7$ _____

(a) $(-\infty, 7)$ (b) $\{x \mid x \leq 7\}$ (c) $\{x < 7\}$ (d) (7)

29. $2 \geq x > -2$ _____

(a) (1) (b) (2, 1] (c) $\{x \mid 2 > x > -2\}$ (d) (-2, 2]

30. Write the **Life Principle**: "_____
_____."



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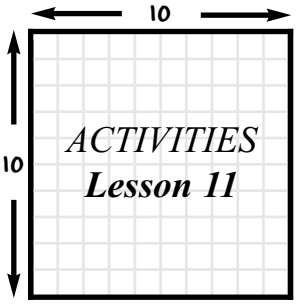
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Inequalities

Combined Intervals



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Your mother combines _____ to make a cake.

2. Several ingredients are usually combined to form a single _____.

3. Often, two statements of inequality are _____ to make one larger statement.

4. You can solve combined intervals by using _____ and by graphing.

5. Two inequality statements combined into one statement is called a(n) _____.

Refer to Example Set 1 to answer questions 6-13.

6. In Step 1, Professor K separates the combined statement of inequality into _____ statements of inequality.

7. In Step 2, Professor K divided each separated inequality by _____, the multiplier (coefficient) of x.

8. In Step 3, Professor K performs the calculations and determines the solution by _____.

9. _____ means to think something through.

10. In Step 4, Professor K graphed each statement of inequality _____ on the same number line.

11. The graph of $4 \leq x$ points in the right, _____ direction.

12. The graph of $x \leq 6$ points in the left, _____ direction.

13. The solution to $12 \leq 3x \leq 18$ in interval notation is [4, 6], as determined by the portion of the graph that is shaded _____.

Refer to Example Set 2 to answer questions 14-18.

14. In this example, Professor K determines the solution without _____ the inequality statements into two distinct problems.

15. The instructions for the problem state that you should express the final answer in both set-builder and _____ notation.

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16. In Step 1, Professor K _____ each term by four.

17. In Step 2, Professor K performs the calculations and determines _____ to be the solution to the combined inequality.

18. In Step 3, Professor K expresses the answer in the form stated in the instructions as $\{x \mid 4 < x \leq 8\}$ or _____.

Refer to Example Set 3 to answer questions 19-21.

19. In Step 1, Professor K subtracts four from all 3 parts of the _____ inequality statement.

20. In Step 2, Professor K _____ every term by three.

21. In Step 4, Professor K expresses the solution, $7 > x \geq 3$ in _____ and interval notation.

Solve the following combined inequalities. Show your work in the space provided. Express the solution in set-builder and interval notation on the blank.

22. $56 < 8x \leq 64$ _____

23. $6 > 3x > 24$ _____

24. $25 \leq 2x + 5 \leq 45$ _____

25. $3 \geq x + 2 > 7$ _____

26. $-3 < 3x \leq 9$ _____

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27. $100 < 5x + 25 \leq 225$ _____

28. $5 > 2x - 3 > -9$ _____

(a) $\{x \mid 4 > x > 3\}$, (4, 3)
(b) $\{x \mid 8 > x > -6\}$, (8, -6)
(c) $\{x \mid 4 > x > -3\}$, (4, -3)
(d) $\{x \mid 6 > x > -4\}$, (6, -4)

29. $49 < 7x < 91$ _____

(a) $\{x \mid 42 < x < 84\}$, (42, 84)
(b) $\{x \mid 7 < x < 13\}$, (7, 13)
(c) $\{x \mid 7 \leq x < 13\}$, [7, 13)
(d) $\{x \mid -7 < x < 13\}$, (-7, 13)

30. Write the **Life Principle**: "_____
_____."

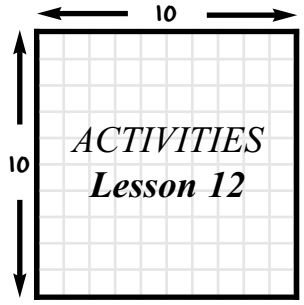
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Absolute Value

Absolute Value

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. In nature are certain concepts and laws that are called _____.

2. Something that is always true or unquestionable is called a(n) _____.

3. An ***absolute*** law in physics states, "for every action there is a(n) _____ and _____ reaction."

4. Up and down are _____.

5. Things that go up, must come down because of _____.

6. When a rocket blasts off, the _____ of the engines in one direction causes the rocket to move in the _____ direction.

7. In society there exist _____ in relationships between people and government.

8. The ***magnitude*** of a number is the distance of the number from _____ on a number line.

9. Negative 2 and positive 2 are both _____ units from the origin on the number line.

10. Another term for origin is _____.

11. Negative 2 is to the left of zero, or in the _____ direction.

12. Positive 2 is to the right of zero, or in the _____ direction.

13. The sign of the number determines _____.

14. _____ is the magnitude of a number or, the positive value of a number.

15. Both 2 and -2 have a magnitude of 2, because both numbers are located _____ units from zero.

16. The ***absolute value*** of 5 is _____.

17. The absolute value of -6 is _____.

18. | | is the grouping symbol for _____.

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Refer to Example Set 1 to answer questions 19-21.

19. In part a), four is _____ units from zero.

20. In part b), negative three is _____ units form zero.

21. You can determine the absolute value of a number by looking at the distance the number is from _____.

Refer to Example Set 2 to answer questions 22-26.

22. |-5| = _____

23. |10| = _____

24. |-37| = _____

25. |-1| = _____

26. |0| = _____

Determine the absolute value of the following. Write the answer on the blank.

27. |55| = _____

28. |-95| = _____

29. |73| = _____

30. |-17| = _____

31. |9| = _____

32. |8| = _____

(a) 8 (b) -8 (c) a or b (d) none of these

33. |-66| = _____

(a) -66 (b) 66 (c) 33 (d) 22

34. |89| = _____

35. |-1| = _____

36. - |9| = _____

(a) 9 (b) -9 (c) -19 (d) 19

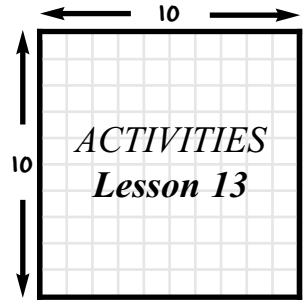
37. - |-7| = _____

38. Write the **Life Principle**: "_____
_____."

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Absolute Value

Absolute Grouping

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. "Birds of a feather _____ together."

2. In European ***royal*** families, ***marriage*** within certain groups is _____.

3. A person in the lineage of a king is considered _____.

4. In mathematics, numbers are often _____ using mathematical properties.

5. Parentheses and brackets are the most _____ grouping symbols.

6. | | is the grouping symbol for _____.

7. Example Set 1 shows that the symbol, | | is considered a special type of _____ symbol.

Refer to Example Set 1 to answer questions 8-13.

8. In a), 2 |3| = 2 • _____ = 6

9. In b), 4 |-8| = 4 • 8 = _____

10. In c), - |22| = - (____) = - 22

11. In d), |25 - 5| = _____ = _____

12. In e), |-45 + 25| = _____ = 20

13. In f), - |13 - 20| = _____ = -(7) = _____

14. Professor K must use _____ in Example Set 2 to determine the solutions.

Refer to Example Set 2 to answer questions 15-20.

15. In a), the absolute value of 4 is _____.

16. In b), |-8 - 2| = _____ .

17. In c), -22 + 25 = _____.

18. In d), 2 |20| = 2(____) = 40.

19. In e), |-45 + 25| = _____ .

20. Operations within grouping symbols must be performed _____.

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Simplify the following expressions containing absolute value symbols. Write the answer on the blank.

21. 2 |9| = _____

22. 3 |-1| = _____

23. - |39| = _____

24. 6 |-3| = _____

25. |4 - 2| = _____

26. |7 - 9| = _____

(a) -2 (b) 16 (c) -16 (d) 2

27. |-8 + 5| = _____

(a) 3 (b) -3 (c) 13 (d) -13 (e) none of these

28. 3 |3| + 3 = _____

(a) 9 (b) -9 (c) 6 (d) -12 (e) none of these

29. 2 |-3 -2| = _____

30. - |4| + 8 = _____

31. 4 |4 - 2| + 3 = _____

32. 5 |6 - 3| - 2 = _____

33. Write the **Life Principle**: "_____
_____."

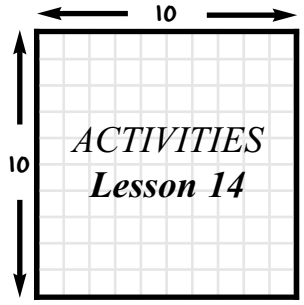
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Algebra



Distance

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. You can calculate the length of a line in the Cartesian coordinate system by using a _____.

2. This formula is known as the _____.

3. Write the ***distance formula*** on the blank. _____.

4. Write the distance formula in words on the blank.

_____

_____

_____

5. The ***abscissas*** are the _____.

6. The ***ordinates*** are the _____.

7. The distance formula comes from the _____Theorem.

8. Write the Pythagorean Theorem algebraically _____.

9. *c* represents the length of the _____ segment between two points.
(a) angle (b) line (c) axis (d) congruent

10. *a* represents the length of the distance along the _____ (the difference of the abscissas).

11. *b* represents the length of the distance along the _____ (the difference of the ordinates).

Refer to Figure 14.1 to answer questions 12-14.

12. b = _____

13. a = _____

14. Write the two remaining coordinates of the three points shown. (x_1, y_1), _____, _____

15. To find the value of c in $c^2 = a^2 + b^2$, you must calculate the _____ of each side of the equation.

16. c = _____ or _____ (after substitution for a and b)

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Refer to Example Set 1 to answer questions 17-27.

17. x_1 = _____

18. (x_1, y_1) = _____

19. (x_2, y_2) = _____

20. $(4 - 6)^2$ = _____

21. $(3 - 2)^2$ =_____

22. $\sqrt{(4-6)^2+(3-2)^2}$ = _____

23. Does it matter which point you choose as (x_1, y_1) and (x_2, y_2)? _____ Yes _____ No

24. _____ units is the distance between the points (4, 3) and (6, 2).

25. In b), $y_1 = y_2$ = _____.

26. $(1 - 1)^2 = 0^2$ = _____

27. _____ units is the distance between the points (-2, 1) and (3, 1).

Refer to Example Set 2 to answer questions 28-35.

28. This calculation is of the _____ between the points with coordinates: (-4, 3) and (6, -2).

29. $\sqrt{(-4-6)^2+[3-(-2)]^2} = \sqrt{(-10)^2+(5)^2}$ = _____

30. $\sqrt{100+25}$ = _____

31. $\sqrt{125} = \sqrt{25 \bullet 5} = \sqrt{25} \bullet \sqrt{5}$ = _____

32. In b), x_2 = _____, $x_1 = 3$, y_2 = _____, $y_1 = 3$.

33. $\sqrt{(-2-3)^2+(2-3)^2} = \sqrt{(-5)^2+(-1)^2}$ = _____

34. $\sqrt{25+1}$ = _____

35. _____ units is the distance between the points (-2, 2) and (3, 3).

Use the distance formula to calculate the distance between the points. Be sure to show your work. Write your answer on the blank.

36. (3, 5), (7, 2) _____

(a) 4 (b) 3 (c) 5 (d) 6

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37. (9, 1), (-3, 4)_____
(a) 12 (b) 10 (c) $\sqrt{12}$ (d) $\sqrt{125}$ (e) none of these

38. (0, 0), (3, 3)_____
(a) $3\sqrt{3}$ (b) $2\sqrt{3}$ (c) $3\sqrt{2}$ (d) 6

39. (2, 1), (1, 10)_____

40. (5, 18), (3, 16) _____

41. (34, 27), (33, 27) _____

42. (2, 9), (2, 16) _____

43. (3, 42), (1, 40) _____

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44. (587, 600), (584, 599) _____

45. Write the **Life Principle**: "_____
_____."

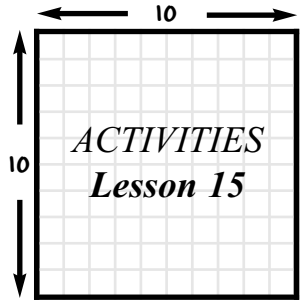
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Algebra



Midpoints

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The period of time from about _____ A.D. to _____ A.D. is called the ***Middle Ages***.

2. In the life of an individual, the ages between 40 and 60 years old are considered _____.

3. The middle of something refers to _____ of the time, journey or experience.

4. Line segments also have a middle or can be divided into two _____ pieces.

5. Mathematicians refer to this point as the _____.

6. At that point, as much of the line segment is on one side of the _____ as on the other side of the _____.

7. When a line is defined by its endpoints, a formula exists to calculate the coordinates of the _____ that names the ***midpoint***.

8. The formula for the ordered pair that names the midpoint of a line segment is _____.

Refer to Example Set 1 to answer questions 9-12.

9. In Step 1, Professor K wrote the _____ of the endpoints.

10. In Step 2, Professor K calculated the value of the x-coordinate or abscissa of the _____.

11. In Step 3, Professor K calculated the value of the y-coordinate or ordinate of the _____.

12. In Step 4, Professor K determined the ordered pair naming the midpoint is _____.

Refer to Example Set 2 to answer questions 13-16.

13. The ordered pairs naming the endpoints are _____ and _____.

14. In Step 2, Professor K determined the x-coordinate of the midpoint to be _____.

15. In Step 3, Professor K determined the y-coordinate of the midpoint to be _____.

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16. The ordered pair that names the midpoint of the line segment between the points (4, 8) and (12, 20) is _____.

Use the midpoint formula to determine the coordinates of the midpoint of the line segment between the points in each problem below. Show your work and write the answer on the blank.

17. (1, 4), (3, 6) _____

(a) (5, 2) (b) (1, 1) (c) (-2, 5) (d) (2, 5)

18. (5, 8), (3, 0) _____

(a) (-4, -4) (b) (0, 8) (c) (8, 8) (d) (4, 4)

19. (2, 2), (4, 8) _____

(a) (3, 5) (b) (-3, -5) (c) (5, 3) (d) (2, 6)

20. (25, 30), (75, 60) _____

21. (5, 10), (5, 50) _____

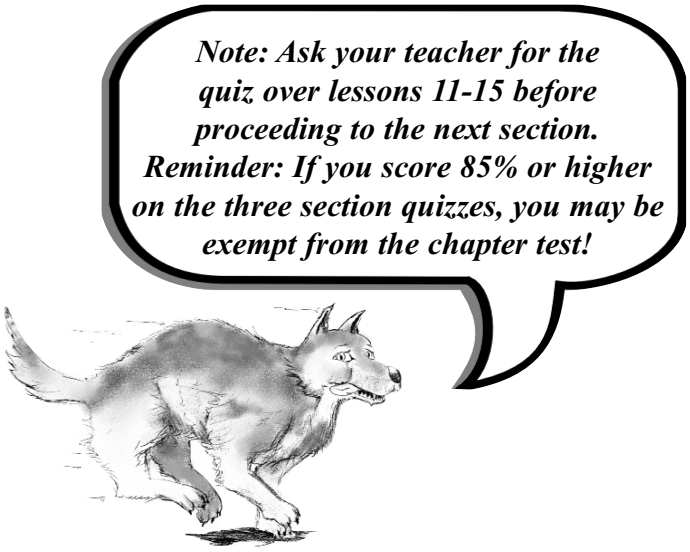
22. (1, 1), (3, 3) _____

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23. (400, 100), (200, 200) _____

24. (13, 18), (15, 20) _____

25. Write the **Life Principle**: "_____
_____."



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Intermediate Math Skills

Mathematics Charts

LENGTH - ENGLISH SYSTEM

12 inches	=	1 foot
3 feet	=	1 yard
5.5 yards	=	1 rod
320 rods	=	1 mile
1,760 yards	=	1 mile
5,280 feet	=	1 mile

VOLUME - ENGLISH SYSTEM

1 tablespoon, Tbsp, T	=	3 teaspoons, tsp
1 cup, c	=	16 tablespoons, Tbsp, T
1 pint, pt	=	2 cups, c
1 quart, qt	=	2 pints, pts
1 gallon, gal	=	4 quarts, qts

WEIGHT - ENGLISH SYSTEM

1 pound, lb	=	16 ounces, oz
1 hundredweight, cwt	=	100 pounds, lbs
1 ton	=	20 hundredweight, cwt
1 ton	=	2000 pounds, lbs

LENGTH - METRIC SYSTEM

1 meter	=	1,000 millimeters
1 meter	=	100 centimeters
1 kilometer	=	1,000 meters
1 centimeter	=	10 millimeters

VOLUME - METRIC SYSTEM

1 liter	=	1,000 milliliters
1 liter	=	100 centiliters
1 kiloliter	=	1,000 liters
1 centiliter	=	10 milliliters

WEIGHT - METRIC SYSTEM

1 gram	=	1,000 milligrams
1 gram	=	100 centigrams
1 kilogram	=	1,000 grams
1 centigram	=	10 milligrams

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PERFECT SQUARES

$\sqrt{1}=1$	$\sqrt{25}=5$	$\sqrt{81}=9$	$\sqrt{169}=13$
$\sqrt{4}=2$	$\sqrt{36}=6$	$\sqrt{100}=10$	$\sqrt{196}=14$
$\sqrt{9}=3$	$\sqrt{49}=7$	$\sqrt{121}=11$	$\sqrt{225}=15$
$\sqrt{16}=4$	$\sqrt{64}=8$	$\sqrt{144}=12$	$\sqrt{256}=16$

PERFECT CUBES

$\sqrt[3]{1}=1$	$\sqrt[3]{-8}=-2$	$\sqrt[3]{64}=4$	$\sqrt[3]{-125}=-5$
$\sqrt[3]{-1}=-1$	$\sqrt[3]{27}=3$	$\sqrt[3]{-64}=-4$	$\sqrt[3]{216}=6$
$\sqrt[3]{8}=2$	$\sqrt[3]{-27}=-3$	$\sqrt[3]{125}=5$	$\sqrt[3]{-216}=-6$

$$P = \frac{\text{the number of elements in the set containing favorable outcomes}}{\text{the number of elements in the sample set}}$$

$$Midpoint = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

FORMULAS

Surface Area	Area	Volume	Perimeter/ Circumference	Others
Sphere: $A_s = 4\pi r^2$	**Triangle:** $A = {}^1\!/_2 bh$	**Sphere:** $V = {}^4\!/_3 \pi r^3$	**Perimeter of a Rectangle:** $P = 2w + 2l$	**Pythagorean Theorem:** $c^2 = a^2 + b^2$
Cylinder: $A_s = 2\pi rh + 2\pi r^2$	**Rectangle:** $A = l \times w$	**Cone:** $V = {}^1\!/_3 \pi r^2 h$	**Circumference of a Circle:** $C = 2\pi r$ or $C = \pi d$	**Convert to Fahrenheit:** $F = {}^9\!/_5 C + 32$
Cube: $A_s = 6s^2$	**Circle:** $A = \pi r^2$	**Rectangular Prism:** $V = l \times w \times h$		**Convert to Celsius:** $C = {}^5\!/_9 (F - 32)$
Lateral Surface Area of a Cone: $A_{ls} = \pi rl$	**Trapezoid:** $A = {}^1\!/_2 (b_1 + b_2)h$	**Square Pyramid:** $V = ({}^1\!/_3) lwh$		**Distance:** $d = r \bullet t$
		Triangular Prism: $V = {}^1\!/_2 bhl$		**Slope:** $y = mx = b$
		Cylinder: $V = \pi r^2 h$		**Simple Interest:** $I = prt$

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Mathematics Charts

TIME CONVERSIONS

1 week = 7 days
1 year = 12 months

CONVERSIONS

English to Metric	
1 ounce (oz)	28.35 grams (g)
1 pound (lb)	454 grams (g)
1 ton (T)	907.2 kilograms (kg)

Metric to English	
1 gram (g)	.035 ounce (oz)
1 kilogram (kg)	2.2 pounds (lb)
1 metric ton (mt)	2200 pounds (lb)

English to Metric	
1 cubic inch	16.39 cubic cm
1 gallon	3.785 liters
1 cubic foot	28.316 liters
1 quart	.946 liters

Metric to English	
1 cubic cm	.061 cubic inch
1 cubic meter	35.315 cubic feet
1 liter	1.05 quarts
1 liter	.264 gallon

English to Metric	
1 inch	2.54 cm
1 foot	0.3048 meter
1 yard	0.9144 meter
1 mile	1.6 km

Metric to English	
1 centimeter	0.3937 in.
1 meter	39.37 in.
1 meter	1.09 yds
1 kilometer	0.6213 mile

AREA CONVERSIONS

1 square centimeter = 0.155000 sq in.
1 square meter = 10.763910 sq ft
1 square inch = 645.16 sq mm
1 square foot = 0.09290304 sq meter
1 square yard = 0.836127 sq meter
1 square foot = 144 sq in.

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