Name_____   Period _____   Date_____

Math Links

MATHLINKS GRADE 8
STUDENT PACKET 2
EXPRESSIONS AND EQUATIONS 1

MathLinks: Grade 8 (Student Packet 2)

WORD BANK

Word or Phrase	Definition or Explanation	Example or Picture
equality		
equation		
evaluate		
expression		
inequality		
simplify		
solve		
unknown		
variable		

EXPLORING EXPRESSIONS

Summary (Ready)	Goals (Set)
We will write expressions with numbers and variables. We will simplify numerical expressions using the conventions for order of operations.	• Apply conventions for order of operations to evaluate expressions. • Write variable expressions.

Warmup (Go)

1. Below are four phrases associated with simplifying expressions using the order of operations conventions. Put them in the correct order by numbering them from 1 to 4, with 1 being first and 4 being last.

    _____ Perform addition and subtraction from left to right.

    _____ Simplify expressions that are grouped (such as expressions within parentheses).

    _____ Perform multiplication and division from left to right.

    _____ Simplify expressions with exponents.

Simplify each expression using the conventions for order of operations.

2. $-24 + (5 - 3)^2 + 16 \div 4$

3. $\dfrac{-24 + (5 - 3^2) + 16}{4}$

Substitute the given values of the variables into each formula.

4.	The formula for area of a rectangle with length ℓ and width w is $A = \ell w$. Find the area of a rectangle with $w = 4$ cm and $\ell = \dfrac{1}{2}$ cm.	5.	Use the formula $d = rt$ to find the distance d traveled, when the rate of speed r is 75 miles per hour, and time t is 2.5 hours.

WRITING EXPRESSIONS

- Use each of the numbers 3, 6, and 12 once to write an expression for each target value.
- Use any operation symbols or grouping symbols necessary.
- Simplify your expression to show it is equal to the target value.

	Target Value	Expression
1.	18	____ (____ − ____)
2.	21	
3.	15	
4.	30	
5.	-30	

Write an expression to match each statement.

6. a. The number of puppies is 6 and the number of kittens is 7.

Write an expression for the total number of puppies and kittens: _____

b. The number of puppies is p and the number of kittens is k.

Write an expression for the total number of puppies and kittens: _____

7. a. KC had 12 trading cards and gave away 3 of them.

Write an expression for the number of trading cards she has now: _____

b. KC had x trading cards and gave away y of them.

Write an expression for the number of trading cards she has now: _____

TARGET VALUES CHALLENGE

Your teacher will randomly generate four numbers. Write expressions for as many target values as you can. Use each number once in each problem. You may use any operation symbols or grouping symbols necessary.

The four numbers are: _____ _____ _____ _____

	Target Value	Expression
1.	0 →	
2.	1 →	
3.	2 →	
4.	3 →	
5.	4 →	
6.	5 →	
7.	6 →	

	Target Value	Expression
8.	7 →	
9.	8 →	
10.	9 →	
11.	10 →	
12.	12 →	
13.	15 →	
14.	20 →	

PRACTICE 1

- Use each of the numbers 2, 5, and 8 once to write an expression for each target value.
- Use any operation symbols or grouping symbols necessary.
- Simplify your expression to show it is equal to the target value.

	Target Value	Expression
1.	15	
2.	5	
3.	2	
4.	9	
5.	20	

Write an expression to match each statement.

6.	a.	Sarah has 5 ribbons. Connie has 3 times as many ribbons as Sarah. Write an expression for the number of Connie's ribbons: _____
	b.	Sarah has x ribbons. Connie has 3 times as many ribbons as Sarah. Write an expression for the number of Connie's ribbons: _____
7.	a.	Salim has 20 crackers. He puts them into 5 equal groups. Write an expression for the number of crackers in each group: _____
	b.	Salim has m crackers. He puts them into 5 equal groups. Write an expression for the number of crackers in each group: _____

WHAT'S WRONG HERE?

Each expression is evaluated **<u>incorrectly</u>**. For each expression, make the correction, explain the error, and try to rewrite the expression so each original expression is correct. (Hint: Consider using parentheses for multiplication or grouping, or a fraction bar for division.)

	Expression evaluated **incorrectly**	Explain the error.	Rework the original problem, and give the correct answer.	Rewrite the expression so original answer is correct.
1.	$8 \div 2 \bullet 2$ $= 8 \div 4$ $= 2$	The division comes before the multiplication going from left to right.	$8 \div 2 \bullet 2$ $= 4 \bullet 2$ $=$ _____	$8 \div (2 \bullet 2)$ $= 8 \div$ _____ $= 2$
2.	$3 + 4 \bullet 2$ $= 7 \bullet 2$ $= 14$		$3 + 4 \bullet 2$	 $= 14$
3.	-3^2 $= (-3)(-3)$ $= 9$			
4.	$-(5+2)$ $= -5 + 2$ $= -3$			
5.	$4 + 12 \div 2 \bullet 2$ $= 16 \div 4$ $= 4$			
6.	$3 \bullet 4^2 + 10$ $= 12^2 + 10$ $= 144 + 10$ $= 154$			

EXPLORING EQUATIONS

Summary (Ready)	Goals (Set)
We will review the difference between expressions and equations. We will find values of variables to make equations true.	• Understand the difference between expressions and equations. • Understand that a variable may represent an unknown value in an equation. • Understand that variables may represent varying quantities in an equation.

Warmup (Go)

These are examples of numerical **expressions.**		These are examples of numerical **equations.**	
$3 \cdot 7$	$-4 + 6$	$2 - 7 = \text{-}5$	$4 + 1 = \dfrac{40}{8}$
5	$-(x + y)^2$	$\text{-}11 = \text{-}5 + (\text{-}6)$	$9 + 3 = 20 - 8$

1. For each of the following, (circle) the expressions and <u>underline</u> the equations.

36	$12 = \dfrac{24}{2}$	$170 = 10 + 3b + (a - 5) - 17$
$13 - 4 - 8$	$6 - (\text{-}2) = 8$	$4(7 + 2)$

2. In the box above, find two circled expressions that have the same value. Write an equation below that states the two expressions are equal.

_____ = _____

3. In your own words, explain the difference between an expression and an equation.

FILL IN THE BLANKS

Fill in the blank shapes with numbers to make each equation true. Squares and circles can represent different values in different equations, but the same shape must represent the same value in the same equation.

1. $20 = \square + \bigcirc$

2. $20 = \square - \bigcirc$

3. $20 = \square \cdot \bigcirc$

4. $20 = \square \div \bigcirc$

5. $20 = \square + \square + 4$

6. $20 = \square \cdot 4$

7. $20 = 2 \cdot \square - \square$

8. $20 = \dfrac{60}{\bigcirc}$

9. $8 \cdot 6 = 39 + \bigcirc$

10. $7 \cdot 6 = \square - \bigcirc$

11.   Which problems must have exactly one (a unique) correct answer? Explain.

12.   For each problem where the values of the squares and circles are not unique, find different numbers that make the equation true, and write the equation below.

FIND EACH WEIGHT

For each puzzle:
* The same shapes have the same weight.
* A horizontal bar shows balance.
* The additional conditions must be satisfied.

1.

Total weight = 8

△ = 1   ◯ = _____   ☐ = _____
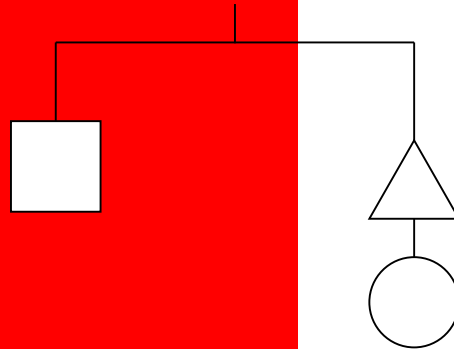
Verify the solution Write a numerical equation to show that the scale is balanced.

_____

2.
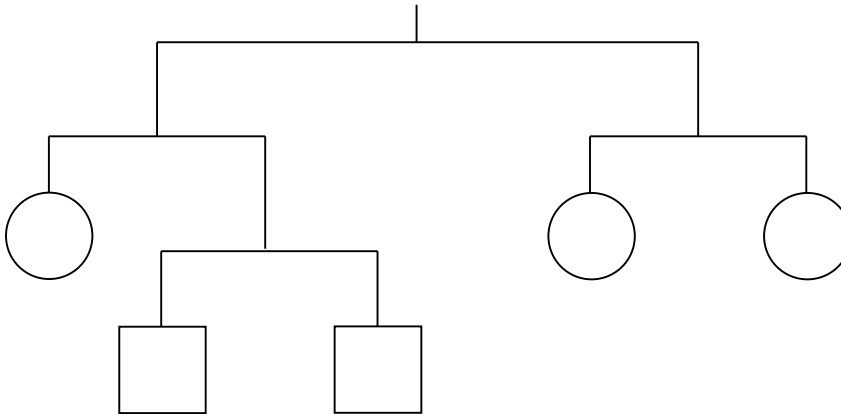
Total weight = 40

◯ = _____   ☐ = _____

Verify the solution. Write a numerical equation to show that the scale is balanced.

_____
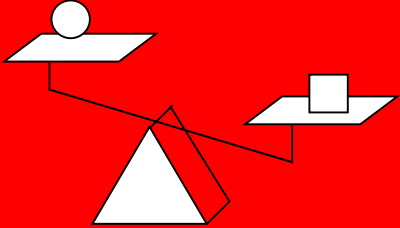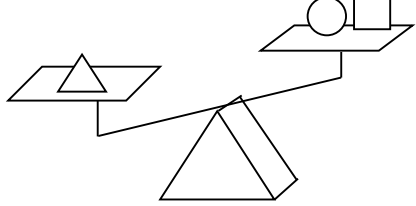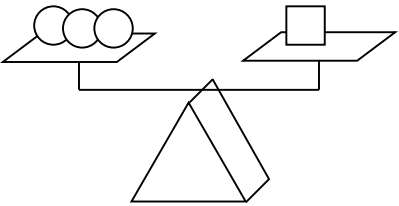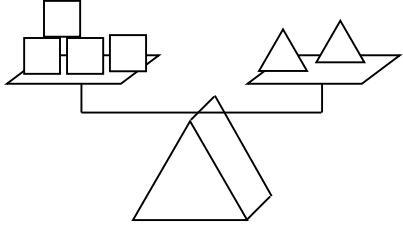
WEIGHTS ON SCALES 1

A balance scale is used to weigh different shapes.
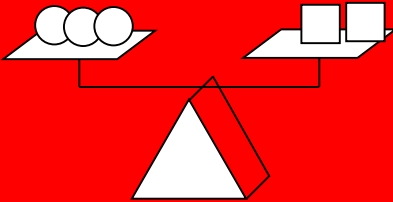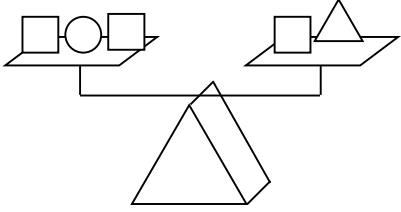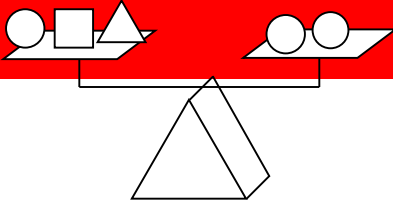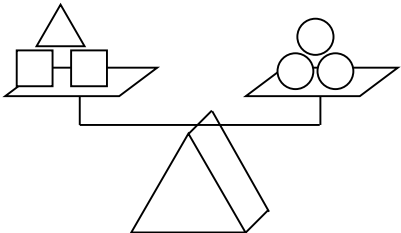
In each problem, the same shapes have the same weight (though a shape can have different weights on different problems).

Write an inequality (< or >) for each pair of shapes showing which represents a greater weight. Then explain.

1. ○ ___ □ Explanation:	2. △ ___ ○ and △ ___ □ Explanation:
3. ○ ___ □ Explanation:	4. △ ___ □ Explanation:

WEIGHTS ON SCALES 2

Use the balance scales from the previous page. Use the given weights to find the unknown weights. Then use those values to write a number sentence for each problem that describes the weights on the scale.

1. If ◯ = 8, then ☐ = _____. Numerical equation:	2. If △ = 4 and ◯ = 1, then ☐ = _____ Numerical equation:
3. If △ = 5 and ☐ = 1, then ◯ = _____ Numerical equation:	4. If △ = 10 and ◯ = 6, then ☐ = _____ Numerical equation:

5. Draw squares, circles, and triangles on the scale to the right and make up numbers for each so that the scale is balanced. Justify your pictures and numbers by writing a numerical equation.
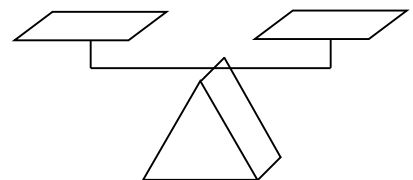
WEIGHTS ON SCALES 3

The balance scale rules apply to these balance puzzles too. Write what you know about balance scale A. Use this information to find the one shape that will balance scale B.
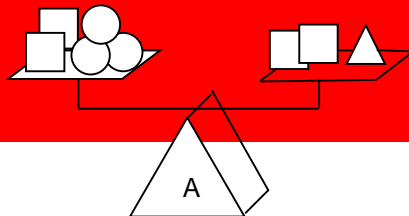
1.
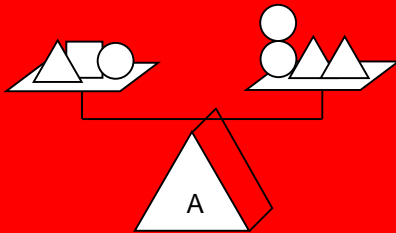
From Scale A I know that:

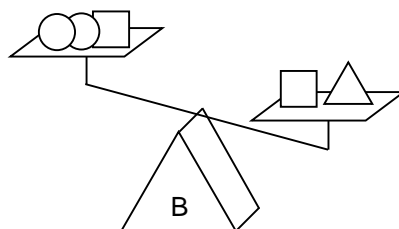What **one** shape must be added to scale B and on what side so that it will balance?
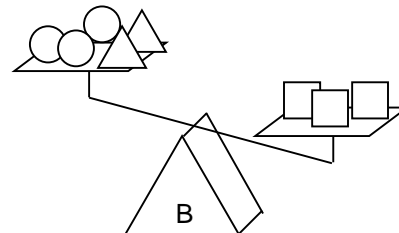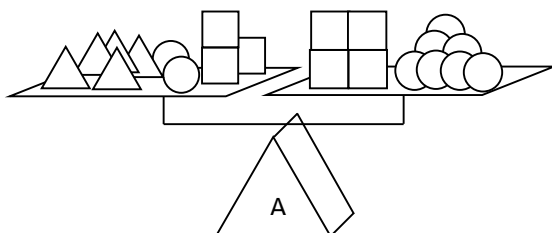
2.

From Scale A I know that:

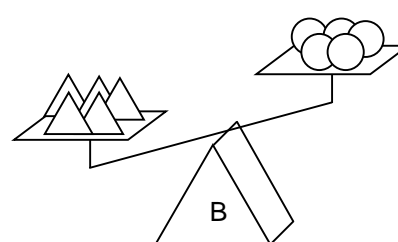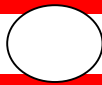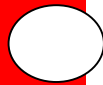What **one** shape must be added to scale B and on what side so that it will balance?
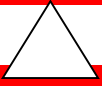
3.

From Scale A I know that:

What **one** shape must be added to scale B and on what side so that it will balance?
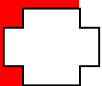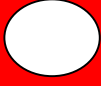
EQUATION CHALLENGE

The ten shapes in these nine equations represent the digits 0 through 9. Each shape represents the same digit in all equations, and different shapes represent different digits. Two shapes together (no equal sign or operation symbol between them) represent a 2-digit number. Determine the value of each shape.
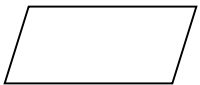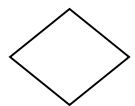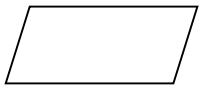
1. ▭ + ◯ = ◯
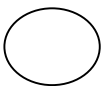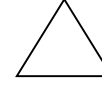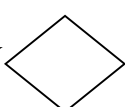
2. △ • △ = ▽
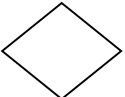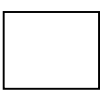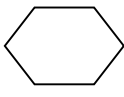
3. ♥ ÷ ☆ = ✚
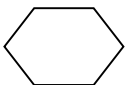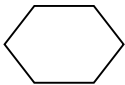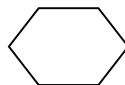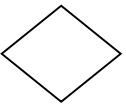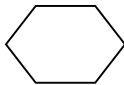
4. ◯ − ✚ = △

5. △ + △ = ▱

6. ▱ • ◇ = ▱

7. ◯ • △ = ☆◇

8. ◇▭ ÷ ☆ = ⬡

9. ⬡ + ⬡ + ⬡ = ◇⬡

MENTAL EQUATION AND INEQUALITY STRATEGIES

Summary (Ready)	Goals (Set)
We will solve equations using mental math strategies. We will solve inequalities and graph their solutions.	• Use mental strategies and logical reasoning to solve equations and inequalities. • Graph solutions to inequalities.

Warmup (Go)

- Write four different equations that start with 10 = _____.
- Each equation must have at least three numbers.
- Each equation must have at least two operation signs.
- Each equation must have at least one set of parentheses that changes the order of operations compared to if it were not there.

Example: $10 = \dfrac{4+2(9-1)}{2}$

Check: $\dfrac{4+2(9-1)}{2} = \dfrac{4+2(8)}{2} = \dfrac{4+16}{2} = \dfrac{20}{2} = 10$

Equation:	Equation:
Check:	Check:
Equation:	Equation:
Check:	Check:

MENTAL REASONING WITH EQUALITIES

Use mental math to solve the following equations. Check your answer by substituting into the original equation to see if the math sentence is true.

1. Equation: $4x = -12$
 	
Think (write in words):
 	
    4 times some number is -12
 	
Solution: $x =$ ____
 	
Check by substitution:
 	
    $4(\_\_\_) = -12$
	2. Equation: $n + 10 = 24$
	
	Think (write in words):
	
	Solution:
	
	Check by substitution:

3. Equation: $-4 = v - 2$ Think (write in words): Solution: Check by substitution:	4. Equation: $12 = 20 - k$ Think (write in words): Solution: Check by substitution:
5. Equation: $-5 = \dfrac{45}{p}$ Think (write in words): Solution: Check by substitution:	6. Equation: $\dfrac{w}{-6} = -1$ Think (write in words): Solution: Check by substitution:

7. Find a solution to the following equation from this set of numbers: $\{-1, -\frac{1}{2}, \frac{1}{2}, 1\}$

   $m + 1 = \dfrac{4}{8}$

THE COVER-UP METHOD

Equation	1. $2(3 + n) = 14$	2. $-10 = \dfrac{x - 5}{-2}$
Cover Up Equation	$2 (\bigcirc) = 14$	$-10 = \dfrac{}{-2}$
Think	2 times _____ is 14. value under my finger (_____) is _____ expression under my finger value under my finger	_____ divided by -2 is -10 value under my finger (_____) is _____ expression under my finger value under my finger
Solution	The number, n, is _____.	The number, x, is _____.
Check		

Use the cover-up strategy to solve the following equations. Then check your work.

3. $4(m - 5) = 28$	4. $-14 = 7(4 + y)$	5. $\dfrac{k + 16}{4} = 8$
6. $-4 = \dfrac{b - 6}{3}$	7. $\dfrac{1}{2}(13 + f) = 11$	8. $5 = \dfrac{-3(v + 8)}{-6}$

9. Find a solution to the following equation from this set of numbers: {-3, -1, 0, 1}

$$\frac{-12}{3(g+1)} = -4$$

PRACTICE 2

Use a mental strategy to solve each equation.
Identify the strategy that you used as mental reasoning (strategy 1) or cover-up (strategy 2).

1. $5 - x = -1$ Strategy used:_____	2. $\dfrac{k-5}{8} = 1$ Strategy used:_____
3. $-4 = n + 2$ Strategy used:_____	4. $4(x - 1) = 8$ Strategy used:_____
5. $-12 = -6(3 + y)$ Strategy used:_____	6. $4m + 2 = -38$ Strategy used:_____
7. $26 = -2(10 + x)$ Strategy used:_____	8. $2 = \dfrac{b}{1.5}$ Strategy used:_____
9. $-6 - v = -12$ Strategy used:_____	10. $6 = \dfrac{4(h+3)}{-2}$ Strategy used:_____

FROM WORDS TO SYMBOLS

- Write an equation to match each statement.
- Then use a mental strategy to solve for the unknown value.

1. There are a total of 12 puppies and kittens. The number of puppies is p and the number of kittens is 4.

2. KC had x trading cards and gave away 7 of them. The number that remains is 15.

3. Sarah has x ribbons. Connie has 3 times as many ribbons as Sarah. The number that Connie has is 21.

4. Salim has v crackers. He puts them into 5 equal groups. The number in each group is 3.

5. The number of basketballs the coach brought to practice is b. Barry has half that many at home. The number Barry has at home is 12.

6. The number of muffins that Matilda bakes is m. She decides to bake 12 more muffins. The number of muffins that Wanda bakes is 3 times Matilda's total. The number of muffins that Wanda baked is 66.

MENTAL REASONING WITH INEQUALITIES

To show solutions are less than (<) or greater than (>) the values on the graph, use an open dot (O) and an arrow (called a ray). To show solutions are less than or equal to (≤) or greater than or equal to (≥) the values on the graph, use a closed dot (●) and a ray.

Use mental math to solve the following inequalities. Check a point on the ray to verify that it makes the inequality true.

1. Inequality: $4x > -12$	2. Inequality: $x + 10 \leq 24$
Think (write in words):	Think (write in words):
"4 times some number is greater than -12. I know 4 • (____) = -12, so the number must be greater than ____.	
Solution: $x >$ ____	Solution:
Graph: -3 0	Graph:
Check a point on the ray. -1(4) = -4; and -4 > -12	Check a point on the ray.
3. Inequality: $x - 5 < -2$	4. Inequality: $\dfrac{x}{4} \geq 2$
Think (write in words):	Think (write in words):
Solution:	Solution:
Graph:	Graph:
Check a point on the ray.	Check a point on the ray.
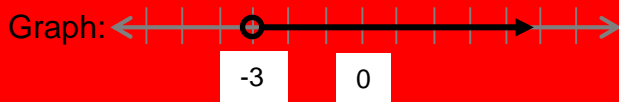
5. Find a solution to $-5x - 1 > 14$ from the following set of numbers: {-4, -3, 0, 3}

SKILL BUILDERS, VOCABULARY, AND REVIEW

SKILL BUILDER 1

1. Graph and label each point on the coordinate plane.

A(4, -2)	E(-1, -2)
B(-3, 5)	F(5, 1)
C(3, 0)	G(-2, 0)
D(3, -4)	H(0, -4)

2. What points are located in quadrant IV?

3. What points are located on the *x*-axis?

4. Write the coordinates of a point that lies in quadrant III that would not fit on the grid to the right.

II   I

III   IV
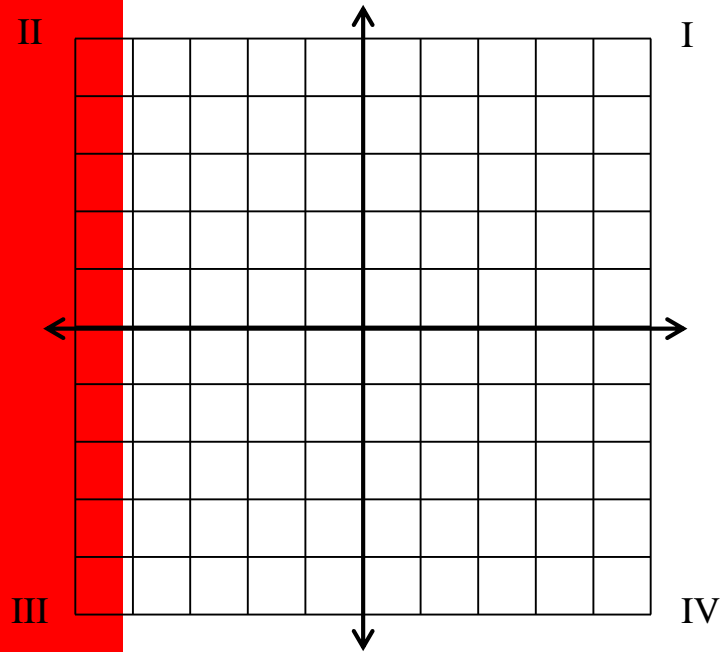
Evaluate each expression for *x* = 10 and *y* = -20.

5. $y - x$	6. $x - y$	7. $3x - 2y$
8. $20 \div x + y$	9. $\dfrac{20}{x + y}$	10. $-x + y^2$

Find the perimeter *P* and area *A* of each rectangle. Include appropriate units in your answer.

11.

$P =$ _____ $A =$ _____

12.

10 in

22 in
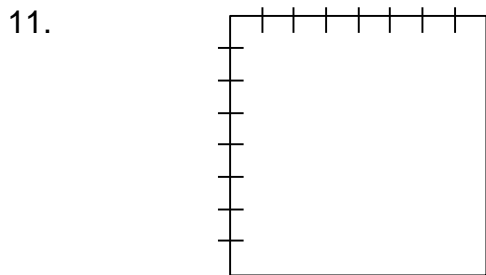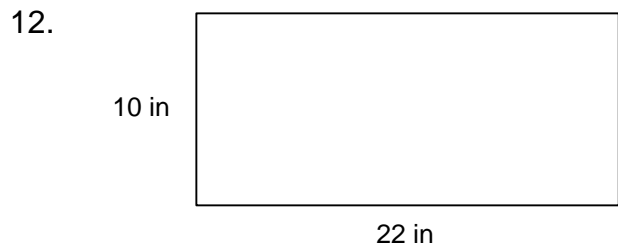
$P =$ _____ $A =$ _____

SKILL BUILDER 2

Compute.

1. $1 + \dfrac{5}{16}$	2. $\dfrac{3}{4} + \dfrac{3}{5}$	3. $1\dfrac{2}{3} + 4\dfrac{5}{6}$
4. $\dfrac{5}{8} - \dfrac{1}{4}$	5. $4\dfrac{3}{5} - 2\dfrac{1}{3}$	6. $4\dfrac{1}{6} - 2\dfrac{3}{4}$
7. $\dfrac{5}{6} \bullet \dfrac{1}{4}$	8. $\dfrac{3}{10} \bullet \dfrac{5}{9}$	9. $1\dfrac{1}{6} \bullet 2\dfrac{1}{4}$
10. $\dfrac{4}{15} \div \dfrac{2}{3}$	11. $\dfrac{2}{3} \div \dfrac{4}{15}$	12. $2\dfrac{1}{4} \div 1\dfrac{1}{2}$
13. $2.7 + 1.09$	14. $8.45 - 3.6$	15. $0.9 \bullet 0.6$
16. $1.9 \bullet 2.6$	17. $2.6 \div 0.13$	18. $8.4 \div 0.08$

SKILL BUILDER 3

1. $4(5 + 9) = 4(5) + 4(9)$ illustrates the _____ property.

2. $36 + 18 = 18 + 36$ illustrates the _____ property of addition.

3. The opposite of 4 is _____.

4. The absolute value of 4 is _____.

5. $-|-6| =$ _____.

6. What is the value of the collection of counters to the right? ____
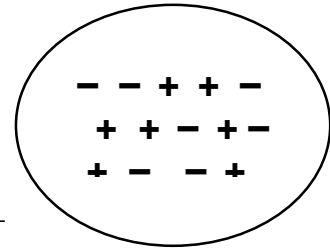
Draw two different collections of counters that have each of the following values.

Value	1st drawing	2nd drawing
7. 6		
8. -3		
9. 0		

Place parentheses in the equations below to make true statements. Extra parentheses may be used. Write "none needed" if the equation is already true.

10. $-6 - 3 \bullet 4 + 2 = -16$	11. $-6 - 3 \bullet 4 + 2 = -24$

Evaluate.

12. $24 \div 6 - 3 \bullet 2^2$	13. $\dfrac{24}{6-3} \bullet 2^2$

SKILL BUILDER 4

Compute. Show your work using positive (+) and negative (–) symbols if needed.

1. (-4) + (7) = _____	2. (4) + (-7) = _____	3. (-9) + (9) = _____
4. (-9) + (-9) = _____	5. (-8) + (3) = _____	6. (-3) + (8) = _____
7. (-6) – (-3) = _____	8. (6) – (-3) = _____	9. (3) – (6) = _____
10. (3) – (-6) = _____	11. (-3) – (6) = _____	12. (-3) – (-6) = _____
13. 4 · 7	14. -4 · -7	15. 6(-9)
16. (-6)(-9)	17. -3 · 6 · -10	18. -14 ÷ 7
19. -36 ÷ -4	20. $\dfrac{24}{6\text{-}3} \bullet 2^2$	21. $\dfrac{49}{\text{-}7}$

SKILL BUILDER 5

Fill in the blank shapes to make each equation true. Squares and circles can represent different values in different equations, but the same shape must represent the same value in the same equation.

1. $\dfrac{\bigcirc}{5} = 13 - 6$

2. $19 + 17 = \boxed{} \bullet \bigcirc$

3. $7 \cdot 7 = 40 + \left(\dfrac{\boxed{}}{\bigcirc} \right)$

4. $20 - \left(\boxed{} + \bigcirc \right) = 4$

5. $4 \cdot \left(8 - \bigcirc \right) = 32$

6. $7 = \dfrac{56}{\left(\boxed{} + \boxed{} \right)}$

7. $(18 - 4) + 6 = \bigcirc + \bigcirc$

8. $5 \cdot 9 = 5 \cdot \left(\boxed{} - \bigcirc \right)$

9.   Which problems have exactly one answer? Explain.

10. For each problem where the values of the squares and circles are not unique, find different numbers that make the equation true, and write the equation below.

SKILL BUILDER 6

For this puzzle:
- The same shapes have the same weight.
- A horizontal bar shows balance.
- The additional conditions must be satisfied.

1.

Total weight = 80

$$\triangle + \triangle = 8$$

$$\triangle + \triangle + \triangle + \triangle = \bigcirc$$

$\bigcirc$ = _____ $\triangle$ = _____ $\hexagon$ = _____

$\diamond$ = _____ $\square$ = _____
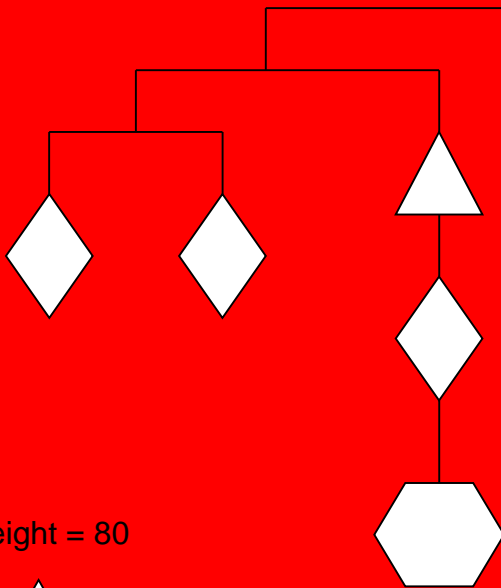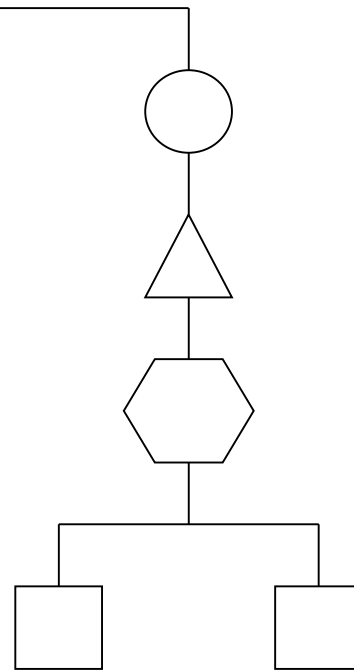
Verify the solution. Write a numerical equation to show that the scale is balanced.

_____
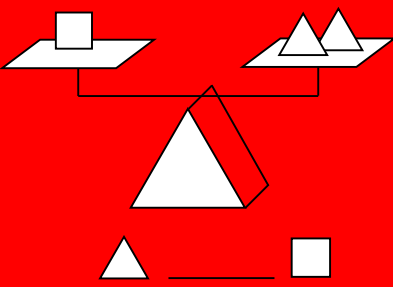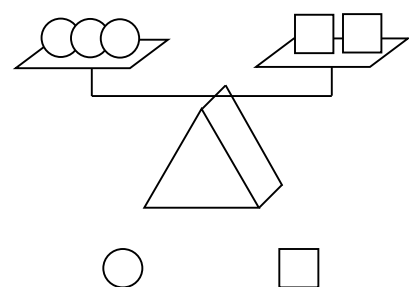
Explain how you found the value of the $\hexagon$. Use words and symbols.

SKILL BUILDER 7
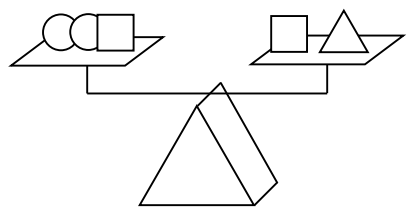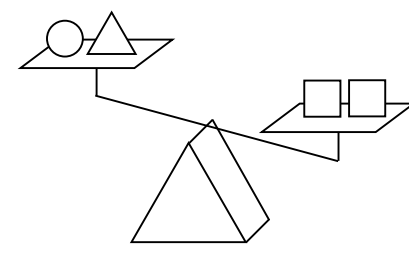
For each puzzle:
- The same shapes have the same weight.
- A horizontal bar shows balance.

Write an inequality for each pair of shapes to show which weighs more. Then explain.

1.	2.
△ _____ ☐	○ _____ ☐
Explanation:	Explanation:

Make up a reasonable weight for each shape.
Use those values to write a number sentence that describes the weights on the scale.

3.	4.
Let △ = ___ ○ =___ ☐ =___	Let △ = ___ ○ =___ ☐ =___
Number sentence:	Number sentence (remember that the scale is not balanced):

SKILL BUILDER 8

Solve using a mental strategy.

1. Equation: $-8 = -3 - x$	2. Inequality: $-6 + x < -4$
Think (write in words):	Think (write in words):
Solution:	Solution:
Check by substitution:	Graph:
	Check a point on the ray.

Use a mental strategy (mental reasoning or cover-up) to solve each equation.

3. $10 - b = -3$	4. $\dfrac{k-2}{-6} = -3$
5. $-8 = 8 + n$	6. $30 = -5(m + 2)$

Write an equation to match each statement.
Then use a mental strategy to solve for the unknown value.

7. Hector had 29 video games and gave n of them to his brother. Now he has 16 left. How many did he give to his brother?

8. On Monday, Shondra ran x laps around the track. On Wednesday, she ran 3 more laps than she did on Monday. On Friday, she ran 16 laps, which is 2 times the number of laps she ran on Wednesday. How many laps did Shondra run on Monday?

FOCUS ON VOCABULARY

Write the best word from the list of choices to complete each statement.

1. $4x + 3$ is an example of a(n) _____ .

   equation, expression, inequality, variable

2. $4x + 3 = 2x - 2$ is an example of a(n) _____ .

   equation, expression, inequality, variable

3. $4x + 3 < 2x - 2$ is an example of a(n) _____ .

   equation, expression, inequality, variable

4. x is an example of a(n) _____ .

   equation, expression, inequality, variable

5. To _____ $3x + 6$ when $x = 2$, we write $3(2) + 6 = 12$.

   evaluate, simplify, solve

6. To _____ $3x = 6$, we write $x = 2$.

   evaluate, simplify, solve

7. To _____ $3(2 + 6)$, we write $3(8) = 24$.

   evaluate, simplify, solve

8. $4x$ is an example of an _____.

   expression, equation

9. $4x = 12$ is an example of an _____.

   expression, equation

SELECTED RESPONSE

Show your work on a separate sheet of paper and choose the best answer(s).

1. Choose ALL expressions that match the following statement: 7 less than a number x.

    A. $7 < x$ B. $x < 7$ C. $x - 7$ D. $7 - x$

2. What is true about the expression $28 \div 7 \bullet 2 - (4 - 1)^2$?

    A.   To evaluate it, perform the
         multiplication before the division

    B.   It is equal to -7

    C.   Both A and B are correct

    D.   It is equal to -1

3. Solve mentally: $-4 + \dfrac{33}{n} = 7$

    A.   3   B.   11

    C.   -3   D.   -11

4. Which equation matches the following statement? Vladimir has 35 DVDs. He puts them into n boxes with equal amounts in each box. The number in each box is 7.

    A. $\dfrac{35}{n} = 7$ B. $\dfrac{n}{35} = 7$ C. $\dfrac{35}{7} = n$ D. $35n = 7$

5. Consider the equation $\square \bullet \square = \bigcirc$.

    *   Only one digit from 0 to 9 can be used in each shape
    *   The digit for both squares must be the same
    *   The digit for the squares must be different than the digit for the circle

    Which choice below is true?

    A.   Square can equal any digit 0 to 9.   B.   Square can equal 0 or 1 only.

    C.   Square can equal any digit 2 to 9.   D.   Square can equal 2 or 3 only.

KNOWLEDGE CHECK

Show your work on a separate sheet of paper and write your answers on this page.

2.1 Exploring Expressions

1. Use each of the numbers 3, 5, and 9 exactly once, and any operation symbols or grouping symbols necessary, to write an expression for the target value 2.

2. Evaluate the expression $18 + 12 \div 3 \cdot 2 - 4^2$.

2.2 Exploring Equations

3. Consider the scale to the right. What can you determine about the relative weights of the triangle and square? Use an inequality symbol in your answer.
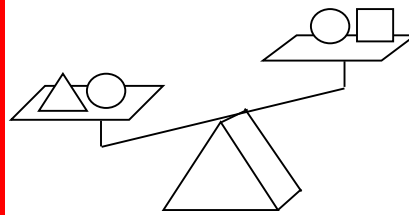
4. For the equation $\square + \square = \bigcirc$, if the circle is equal to $4\frac{1}{2}$, what must be the value of each square? Explain how you know that your answer is correct.

2.3 Mental Equation and Inequality Strategies

Solve each equation using a mental strategy.

5. $-6(5 - x) = -18$

6. $\dfrac{-3(n+4)}{-2} = 9$

HOME-SCHOOL CONNECTION

Here are some questions to review with your young mathematician.

1. Evaluate the expression $\dfrac{18+12}{3 \cdot 2} - 4^2$.

2. Use the information on the balance scale A to find the one shape that will balance scale B.
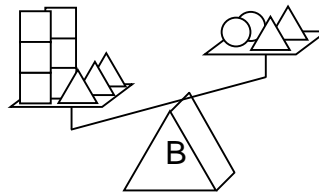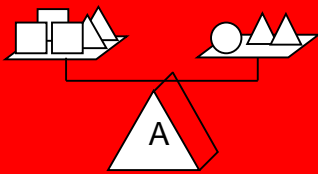
    Explain your reasoning.

3. Solve for x using a mental strategy: $5(x - 10) = 45$.

Parent (or Guardian) Signature _____

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COMMON CORE STATE STANDARDS – MATHEMATICS

STANDARDS FOR MATHEMATICAL CONTENT

6.EE.2a*	Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 – y.*
6.EE.2c*	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.*
6.EE.5*	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6.EE.6*	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
6.EE.7*	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
6.EE.8*	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

*Review of content essential for success in 8th grade.

STANDARDS FOR MATHEMATICAL PRACTICE

MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP6	Attend to precision.
MP7	Look for and make use of structure.