EXTRA PRACTICE

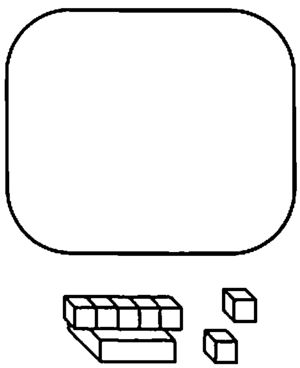
The Extra Practice pages support an effective course in several ways. Many of them reinforce in-class group work so that students can verify their personal understanding at home. Exercises that require the use of the Lab Gear can be done at home with the HomeWork Gear, available from Creative Publications, or with copies of the Paper HomeWork Gear page in the Support Masters section of this binder. Some pages provide additional practice in important skills, should it be needed. A few of the Extra Practice pages provide additional in-class problems to supplement those in the text. The basic-plus path in the Pathways section of this binder gives suggestions for using these pages. Selected answers appear at the end of this section.

Extra Practice 2.1, 2.2 Name

Simplifying Polynomials with Lab Gear

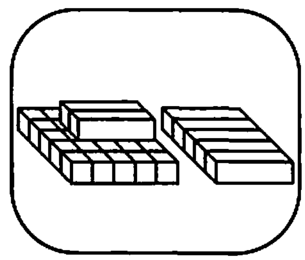
For problems 1-6:

a) Write an expression for the quantity represented.
b) Copy the figure with your Lab Gear and simplify by removing opposites where possible.
c) Write an expression for the simplified figure, in the simplest way.

1. 

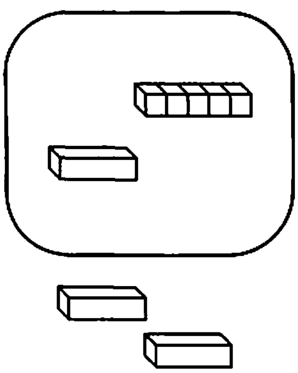
a) ________________

c) ________________

2. 

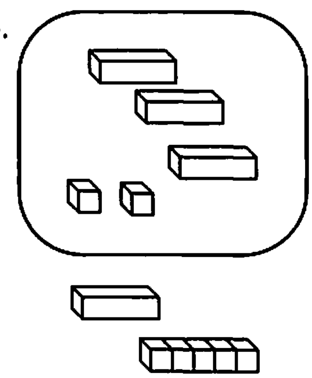
a) ________________

c) ________________

3. 

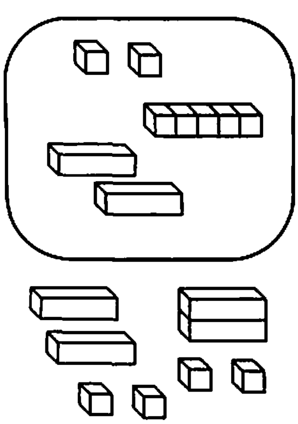
a) ________________

c) ________________

4. 

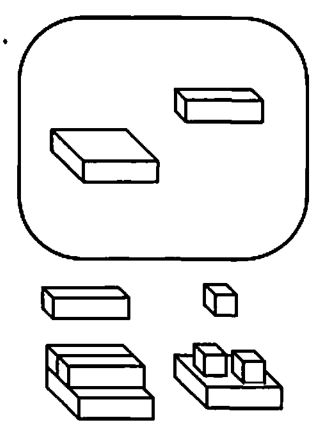
a) ________________

c) ________________

5. 

a) ________________

c) ________________

6. 

a) ________________

c) ________________

Extra Practice 2.1, 2.2 (continued) Name ____________________

For problems 7–10:

a) Build the quantity with your Lab Gear and sketch it.

b) Simplify by removing opposites, and write the simplified expression in the blank.

7. $5 - (x^2 + 10) =$ ____________

8. $(x - 3) + (10 - x) - 5 =$ ____________

9. $x^2 + 2x - (5x - 3) =$ ____________

10. $x^2 - 1 - (x^2 + 2) =$ ____________

For problems 11 and 12, follow the directions above, but use adding zero to get everything downstairs when simplifying:

11. $(3x + 1) - (10 + 2x) =$ ____________

12. $(x^2 - 3x) - (10x - x^2) =$ ____________

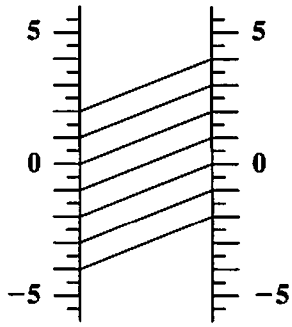
13. Look at the answers to 11 and 12 and compare them to the original expressions. Describe any patterns that you notice.

Extra Practice 2.9

Name ____________________

Nine Function Diagrams

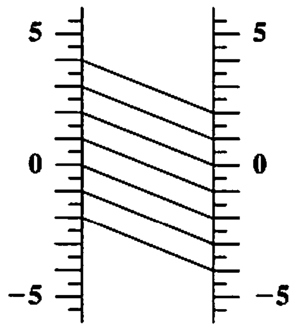
a.



x	y

$x \longrightarrow y =$ ______

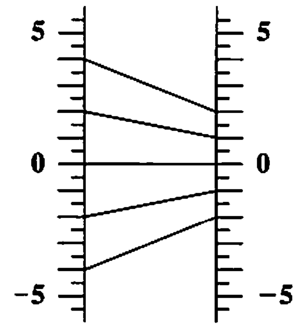
b.



x	y

$x \longrightarrow y =$ ______

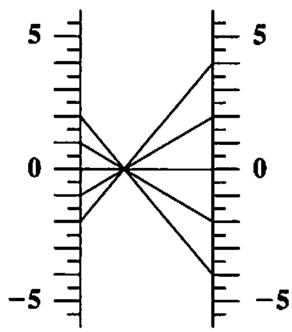
c.



x	y

$x \longrightarrow y =$ ______

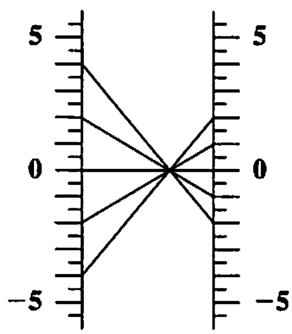
d.



x	y

$x \longrightarrow y =$ ______

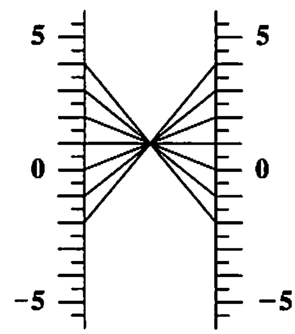
e.



x	y

$x \longrightarrow y =$ ______

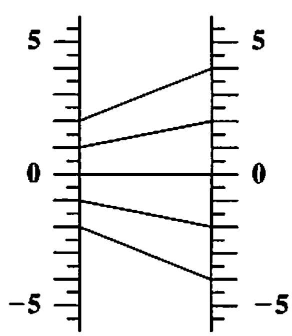
f.



x	y

$x \longrightarrow y =$ ______

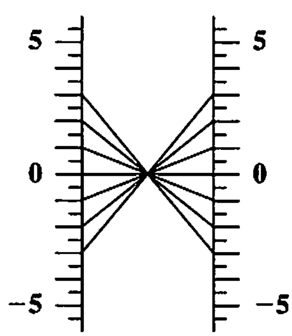
g.



x	y

$x \longrightarrow y =$ ______

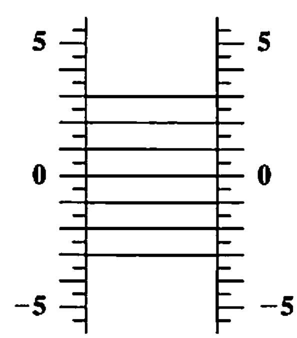
h.



x	y

$x \longrightarrow y =$ ______

i.



x	y

$x \longrightarrow y =$ ______

 Name ______________________

Instructions:

1. Add 3 lines to each diagram, following the pattern. Use a ruler. Use negative and decimal values for x.

2. Make in-out tables for the nine diagrams.

3. Complete the function equation $y =$ ... for each diagram.

4. Three diagrams represent functions of the form $y = x + b$. What are the functions?

5. Six diagrams represent functions of the form $y = mx$. What are the functions?

6. A diagram for $y = x + b$ has parallel in-out lines that slant upward. What can you say about b?

7. A diagram for $y = x + b$ has parallel in-out lines that slant downward. What can you say about b?

8. A diagram for $y = x + b$ has parallel in-out lines that go straight across. What can you say about b?

9. A diagram for $y = mx$ has in-out lines that move closer to each other. What can you say about m?

10. A diagram for $y = mx$ has in-out lines that move apart from each other. What can you say about m?

11. A function diagram for $y = mx$ has in-out lines that cross each other. What can you say about m?

12. Two diagrams above represent functions of the form $y = b - x$. What are the functions?

Extra Practice 3.3

Name

DISTRIBUTING THE MINUS SIGN

Simplify each expression. Show any work you do. Circle your final answer.

1. $2x - 2 + 4x - 5$

2. $2x - 2 - (4x - 5)$

3. $(x^2 - 3x + 2) - (x^2 - 3x - 5)$

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

Find the missing expressions.

5. $3x + (4x + 9) = 3x - (\qquad\qquad)$

6. $(x + 5) - (3 - x^2) = (x + 5) + (\qquad\qquad)$

7. $3x^2 - 7 = x^2 - (\qquad\qquad)$

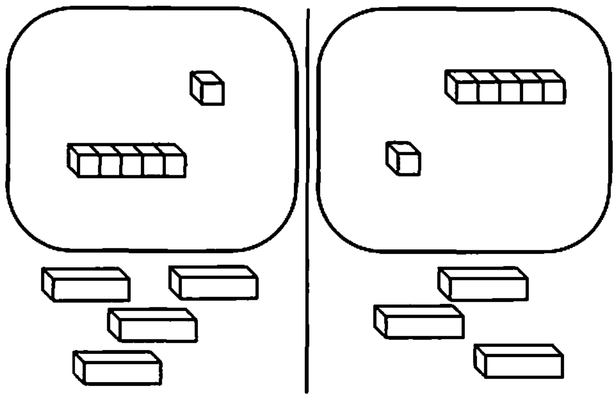
8. $y^2 - 3xy + 2 = xy - y^2 - (\qquad\qquad)$

Extra Practice 3.5 **Name** ____________________

INEQUALITIES WITH LAB GEAR

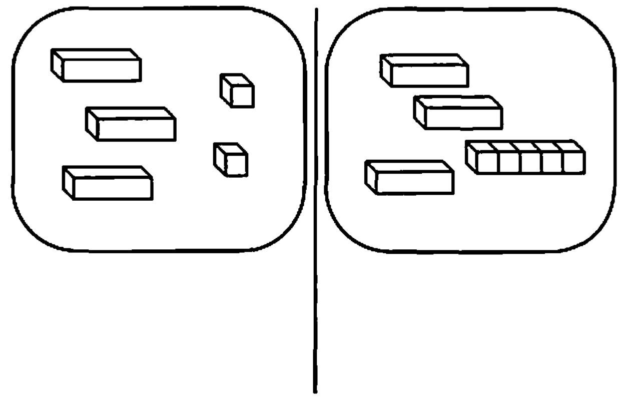
For each problem, decide which side is greater. Write the two expressions shown and place the correct sign (> or <) in the circle. If it is impossible to tell which side is greater, write "?" in the circle.

1.



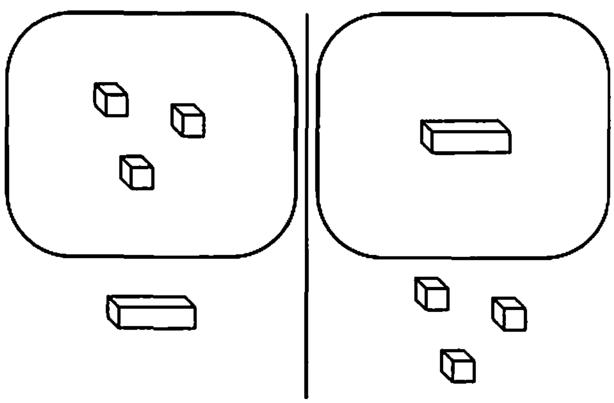
________ ◯ ________

2.



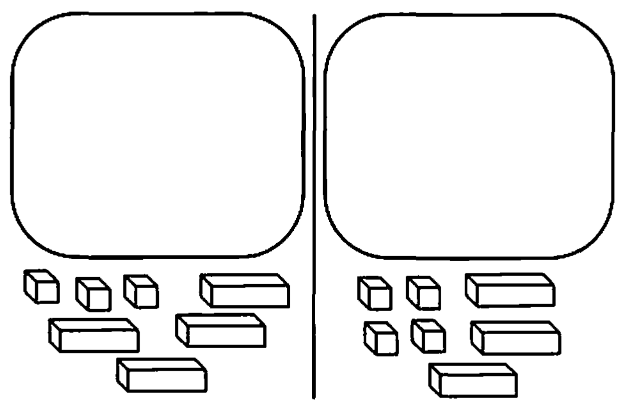
________ ◯ ________

3.



________ ◯ ________

4.



________ ◯ ________

For each problem, arrange the blocks on your workmat to decide which side is greater. Write the correct sign (> or <) in the circle. If you would have to know the value of x to determine which side is greater, put a "?" in the circle, then give one value of x that makes the left side greater, and one that makes the right side greater.

5. $5 - 3x$ ◯ $2 - 3x$

6. $x^2 + 2x - 2$ ◯ $x^2 + 2x + 1$

7. $x^2 - 4$ ◯ $4 - x^2$

8. $(5x + 5) - x^2$ ◯ $5x - (x^2 - 5)$

9. $x^2 + 5x + 5$ ◯ $x^2 + 10x$

10. $3x$ ◯ $6 - 3x$

Extra Practice 3.6

Name

Division with Lab Gear

For each problem, divide. Show your work by making a sketch of the Lab Gear or a table. Circle your answer.

1. $\dfrac{4x + 12}{4} =$

2. $\dfrac{4x + 12}{x + 3} =$

3. $\dfrac{5x^2 + xy}{x} =$

4. $\dfrac{5x^2 + xy}{5x + y} =$

5. $\dfrac{x^2 + 5x + 6}{x + 3} =$

6. $\dfrac{x^2 + 2xy + y^2}{x + y} =$

Extra Practice 3.7 **Name**

Using Reciprocals

Problems like those in Lesson 3.7 #10 provide a way to use reciprocals to solve equations like $\frac{2}{3} \cdot x = 10$. In #10c you were asked to find two numbers a and b, neither equal to 1, so that $\frac{2}{3} \cdot a \cdot b = 10$. One possible solution was $a = \frac{3}{2}$ and $b = 10$, because $\frac{2}{3} \cdot \frac{3}{2} \cdot 10 = 10$. Thus, to solve $\frac{2}{3} \cdot x = 10$, we can let $x = a \cdot b = \frac{3}{2} \cdot 10 = 15$.

Example: Find x, if $10 \cdot x = \frac{2}{3}$
Solution: Using reciprocals, we know that $10 \cdot \frac{1}{10} \cdot \frac{2}{3} = \frac{2}{3}$, so $x = \frac{1}{10} \cdot \frac{2}{3} = \frac{1}{15}$

For problems 1–3, find values for a and b that the first equation, then find x in the second equation.

1. $3 \cdot a \cdot b = 5$ $a =$ $b =$
   $3 \cdot x = 5$ $x =$

2. $7 \cdot a \cdot b = 2$ $a =$ $b =$
   $7 \cdot x = 2$ $x =$

3. $24 \cdot a \cdot b = 8$ $a =$ $b =$
   $24 \cdot x = 8$ $x =$

For problems 4–7, find the value of x that satisfies the equation.

4. $\frac{1}{7}x = 3$ $x =$

5. $6x = \frac{1}{5}$ $x =$

6. $\frac{1}{12}x = \frac{1}{4}$ $x =$

7. $\frac{2}{3}x = \frac{3}{5}$ $x =$

8. Generalization: Suppose m and n are specific numbers, and you wish to find x so that $mx = n$. Explain how to find x.

Extra Practice 3.9 Name

EQUATIONS AND THE COVER-UP METHOD

Solve each equation using the cover-up method. For each step, box the part you're covering up, then write a new equation stating what the boxed expression must equal. Check your solution by substitution.

Example: $6(5 - 2x) = 24$

$6\boxed{(5 - 2x)} = 24$

$5 - \boxed{2x} = 4$

$2\boxed{x} = 1$

$x = 0.5$ *Check*: $6(5-2(0.5)) = 6(5 - 1) = 6(4) = 24$

1. $5 - x = -7$

2. $2 + 16x = 10$

3. $12(9 - x) = -24$

4. $12(x - 9) = 6$

5. $\dfrac{x - 1}{8} = 3$

6. $3 + \dfrac{x}{12} = 0$

7. $\dfrac{220}{x} - 4 = 6$

8. $7 - \dfrac{15}{x + 1} = 2$

9. $\dfrac{2x - 1}{7} - 4 = 5$