

LESSON PRACTICE

Build.

1. $x^2 + 11x + 2$

2. $x^2 + 6x + 8$

3. $x^2 - 8$

Build and add.

4.
$$\begin{array}{r} x^2 - 6x + 3 \\ + 3x^2 + 7x - 9 \\ \hline \end{array}$$

5.
$$\begin{array}{r} x^2 - 8 \\ + x^2 + 6x - 7 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 2x^2 + 10x + 7 \\ + 2x^2 - 8x - 9 \\ \hline \end{array}$$

Build a rectangle and find the area (product).

7. $(x + 1)(x + 2) =$

8. $(x + 4)(x + 3) =$

9. $(x + 1)(x + 5) =$

Multiply.

$$\begin{array}{r} 10. \quad 3X + 2 \\ \times \quad X + 1 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 5X + 5 \\ \times \quad X + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 2X + 1 \\ \times \quad X + 5 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad X + 8 \\ \times 3X + 5 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad X + 3 \\ \times 2X + 1 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 3X + 2 \\ \times 2X + 1 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 4X + 2 \\ \times \quad X + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 2X - 5 \\ \times \quad X + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 3X + 5 \\ \times 3X - 1 \\ \hline \end{array}$$

LESSON PRACTICE

Build.

1. $x^2 - 3x - 7$

2. $2x^2 - 7x - 3$

3. $x^2 + 5x + 9$

Build and add.

4.
$$\begin{array}{r} x^2 + 3x + 2 \\ + x^2 + 7x + 12 \\ \hline \end{array}$$

5.
$$\begin{array}{r} x^2 + 6x + 5 \\ + 3x^2 - x - 2 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 5x^2 - 5x - 10 \\ + 2x^2 + 11x + 5 \\ \hline \end{array}$$

Build a rectangle and find the area (product).

7. $(x + 4)(x + 5) =$

8. $(x + 7)(x + 3) =$

9. $(x + 4)(x + 8) =$

Multiply.

$$\begin{array}{r} 10. \quad 7X + 1 \\ \times \quad X + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 3X + 7 \\ \times \quad X + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 2X + 8 \\ \times \quad 3X + 1 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad X + 8 \\ \times \quad X - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 2X - 1 \\ \times \quad X + 9 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 3X + 5 \\ \times \quad X + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 4X - 2 \\ \times \quad X - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 5X + 2 \\ \times \quad 3X - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 3X + 7 \\ \times \quad 4X + 2 \\ \hline \end{array}$$

SYSTEMATIC REVIEW

Build and add.

$$\begin{array}{r} 1. \quad 3X^2 + 7X + 6 \\ + \quad X^2 + 2X + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 2X^2 + 5X + 1 \\ + \quad X^2 + 3X + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 4X^2 + 8X + 2 \\ + \quad -X^2 + 3X - 1 \\ \hline \end{array}$$

Build a rectangle and find the area (product).

4. $(X + 4)(X + 8) =$

5. $(X + 5)(X + 2) =$

6. $(X + 2)(X + 6) =$

Multiply.

$$\begin{array}{r} 7. \quad 3X + 6 \\ \times \quad X + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 2X + 5 \\ \times \quad X + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 4X - 5 \\ \times \quad X + 1 \\ \hline \end{array}$$

10. Write on one line: $\frac{1}{X^{-4}}$

11. Rewrite using positive exponents: X^{-3}

Simplify. Write expressions with exponents on one line.

12. $5^2 \times 3^0 \times 5^{-4} =$

13. $A^4 \div A^7 =$

14. $(5^2)^5 =$

15. $(5)^{12} = (5^3)^? =$

16. $\sqrt{196} =$

17. $C^{-5} \times C^2 =$

18. The base of a rectangle is $X + 4$, and the height is $X + 5$. What is the area of the rectangle? (Remember that the area of a rectangle is base times the height.)

19. Find the area of the rectangle in #18 if X equals six.

20. Take two times the base and height of the rectangle in #18, using the distributive property of multiplication. Find the polynomial that expresses the new area.

SYSTEMATIC REVIEW

Build and add.

$$\begin{array}{r} 1. \quad X^2 - 3X - 7 \\ + 2X^2 + 4X - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad X^2 + 11X + 2 \\ + 3X^2 - 4X + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad X^2 - 10X - 5 \\ + -2X^2 - X + 14 \\ \hline \end{array}$$

Build a rectangle and find the area (product).

4. $(X + 2)(X + 7) =$

5. $(2X + 3)(X + 4) =$

6. $(X + 1)(X + 9) =$

Multiply.

$$\begin{array}{r} 7. \quad \begin{array}{r} 2X + 4 \\ \times \quad X + 3 \\ \hline \end{array} \end{array}$$

$$\begin{array}{r} 8. \quad \begin{array}{r} 3X - 1 \\ \times \quad X + 4 \\ \hline \end{array} \end{array}$$

$$\begin{array}{r} 9. \quad \begin{array}{r} 2X - 3 \\ \times \quad X - 4 \\ \hline \end{array} \end{array}$$

10. Write on one line: $\frac{1}{X^4}$

11. Rewrite using positive exponents: $\frac{1}{Y^{-5}}$

Simplify. Write expressions with exponents on one line.

12. $3^7 \times 4^3 \times 4^{-2} =$

13. $B^5 \div B^1 =$

14. $(8^3)^6 =$

15. $(2)^{15} = (2^3)^? =$

16. $\sqrt{225} =$

17. $D^{-3} \times D^8 \times D^{-7} =$

18. The base of a rectangle is $2X + 4$, and the height is $X + 4$.
What is the area of the rectangle?

19. Find the area of the rectangle in #18 if X equals 10.

20. The area of a second rectangle is $X^2 + 3X + 1$. What is the sum of the area of the two rectangles (from #18 and #20)?

SYSTEMATIC REVIEW

Build and add.

$$\begin{array}{r} 1. \quad x^2 + 3x - 2 \\ + \quad x^2 + 4x + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 3x^2 + 2x - 1 \\ + \quad 2x^2 - 2x + 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 5x^2 + 4x + 7 \\ + \quad -x^2 + 3x + 7 \\ \hline \end{array}$$

Build a rectangle and find the area (product).

$$4. \quad (x + 3)(x + 3) =$$

$$5. \quad (2x + 4)(x + 2) =$$

$$6. \quad (3x)(x + 2) =$$

Multiply.

$$7. \quad \begin{array}{r} 2x - 3 \\ \times \quad x - 2 \\ \hline \end{array}$$

$$8. \quad \begin{array}{r} x - 1 \\ \times \quad x - 6 \\ \hline \end{array}$$

$$9. \quad \begin{array}{r} 2x + 2 \\ \times \quad x - 3 \\ \hline \end{array}$$

$$10. \quad \text{Write on one line: } \frac{1}{x^5}$$

$$11. \quad \text{Rewrite using positive exponents: } Y^{-2}$$

Simplify. Write expressions with exponents on one line.

$$12. \quad 7^{-2} \times 7^5 \div 7^{-2} =$$

$$13. \quad A^7 \div B^3 =$$

Simplify. Write expressions with exponents on one line.

14. $(5^2)^5 =$

15. $(5)^{12} = (5^3)^? =$

16. $-\sqrt{169} =$

17. $C^0 C^{-4} D^8 D^{-7} D^{-3} C^3 =$

18. Stephanie's savings are represented by $3N + 4$, and Chuck's are represented by $2N + 5$. Write an expression representing their combined savings.
19. Stephanie and Chuck have each been saving as described in #18 for 10 weeks (N). What is the total amount they have saved?
20. The base of a rectangle is $2Y + 7$, and the height is $7Y + 5$. What is the area of the rectangle?

HONORS LESSON

Here are some more problems involving exponents.

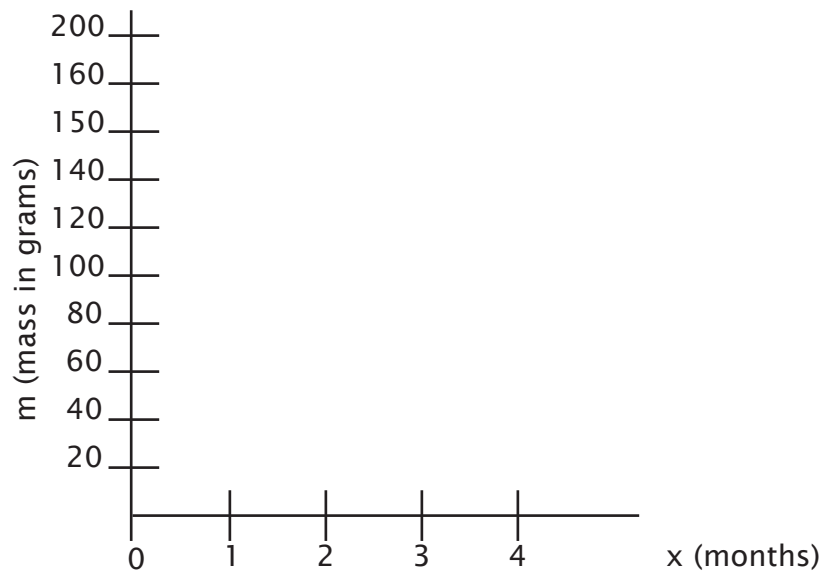
Follow the directions and answer the questions.

- Suppose that m represents the mass in grams of a substance that halves in size each month. You can find the value for each month simply by dividing the value for the previous month by two.

x (number of months)	0	1	2	3	4	
m (mass in grams)	200					

- What was the mass of the substance when measuring began? (time = 0)
- How long will it be until there are 100 grams remaining?
- How long will it be until there are only 50 grams remaining?
- What is the mass of the substance after four months?

6. Make a graph showing the first five months of decrease of the substance described on the previous page.



In real life, a scientist may wish to find the value of m for a certain number of months without finding every value in between. In this case, $m = 200(.5)^x$, where x stands for the number of months. Compare the example to the corresponding value on your chart.

Example $m = 200(.5)^x$. Find the value of m after four months.
 $m = 200(.5)^4$ $m = 200(.0625) = 12.5$ grams

7. Use the equation given above to find the mass of the substance after six months.