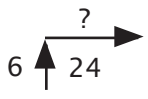
LESSON 8

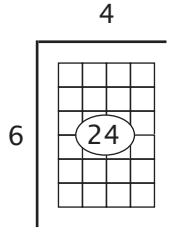
Division by 6

Notice that all the multiples of six are even numbers. Notice also that when you add the digits of the multiples, they add up to three or a multiple of three. In $6 \times 7 = 42$, 42 is an even number and $4 + 2 = 6$, which is a multiple of three. Carefully observe the student's progress and move to the next lesson only when you are satisfied with his or her mastery.

Example 1

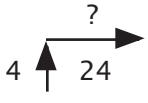


$$\frac{24}{6} = 24 \div 6 =$$

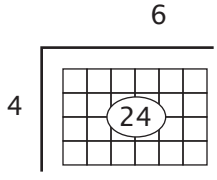


"What times six is equal to 24?"
"Six times what is equal to 24?"
"How many sixes can I count out of 24?"
"24 divided by six equals what number?"

Example 2



$$\frac{24}{4} = 24 \div 4 =$$



"What times four is equal to 24?"
"Four times what is equal to 24?"
"How many fours can I count out of 24?"
"24 divided by four equals what number?"

1 ÷ 1	2 ÷ 2	3 ÷ 3	4 ÷ 4	5 ÷ 5	6 ÷ 6	7 ÷ 7	8 ÷ 8	9 ÷ 9	10 ÷ 10
2 ÷ 1	4 ÷ 2	6 ÷ 3	8 ÷ 4	10 ÷ 5	12 ÷ 6	14 ÷ 7	16 ÷ 8	18 ÷ 9	20 ÷ 10
3 ÷ 1	6 ÷ 2	9 ÷ 3	12 ÷ 4	15 ÷ 5	18 ÷ 6	21 ÷ 7	24 ÷ 8	27 ÷ 9	30 ÷ 10
4 ÷ 1	8 ÷ 2	12 ÷ 3	16 ÷ 4	20 ÷ 5	24 ÷ 6	28 ÷ 7	32 ÷ 8	36 ÷ 9	40 ÷ 10
5 ÷ 1	10 ÷ 2	15 ÷ 3	20 ÷ 4	25 ÷ 5	30 ÷ 6	35 ÷ 7	40 ÷ 8	45 ÷ 9	50 ÷ 10
6 ÷ 1	12 ÷ 2	18 ÷ 3	24 ÷ 4	30 ÷ 5	36 ÷ 6	42 ÷ 7	48 ÷ 8	54 ÷ 9	60 ÷ 10
7 ÷ 1	14 ÷ 2	21 ÷ 3	28 ÷ 4	35 ÷ 5	42 ÷ 6	49 ÷ 7	56 ÷ 8	63 ÷ 9	70 ÷ 10
8 ÷ 1	16 ÷ 2	24 ÷ 3	32 ÷ 4	40 ÷ 5	48 ÷ 6	56 ÷ 7	64 ÷ 8	72 ÷ 9	80 ÷ 10
9 ÷ 1	18 ÷ 2	27 ÷ 3	36 ÷ 4	45 ÷ 5	54 ÷ 6	63 ÷ 7	72 ÷ 8	81 ÷ 9	90 ÷ 10
10 ÷ 1	20 ÷ 2	30 ÷ 3	40 ÷ 4	50 ÷ 5	60 ÷ 6	70 ÷ 7	80 ÷ 8	90 ÷ 9	100 ÷ 10

LESSON PRACTICE

Answer the questions.

1. How many sixes can you count out of eighteen? _____

2. How many sixes can you count out of fifty-four? _____

3. How many sixes can you count out of twelve? _____

4. How many sixes can you count out of sixty? _____

Divide.

5. $6\overline{)12}$

6. $6\overline{)6}$

7. $6\overline{)24}$

8. $6\overline{)36}$

9. $6\overline{)42}$

10. $6\overline{)18}$

11. $60 \div 6 =$ _____

12. $24 \div 6 =$ _____

13. $42 \div 6 =$ _____

14. $\frac{54}{6} =$ _____

15. $\frac{30}{6} =$ _____

Fill in the unknown number to make the division problem true.

16. $48 \div$ _____ $= 8$

17. How many ants are present if there are 24 legs? (Ants have six legs apiece.) _____

18. How much must Dana earn every day in order to earn $30 in six days? _____

LESSON PRACTICE

Answer the questions.

1. How many sixes can you count out of thirty? _____

2. How many sixes can you count out of six? _____

3. How many sixes can you count out of twenty-four? _____

4. How many sixes can you count out of forty-eight? _____

Divide.

5. $6\overline{)36}$

6. $6\overline{)60}$

7. $6\overline{)30}$

8. $6\overline{)18}$

9. $6\overline{)54}$

10. $6\overline{)42}$

11. $6 \div 6 =$ _____

12. $24 \div 6 =$ _____

13. $18 \div 6 =$ _____

14. $\frac{30}{6} =$ _____

15. $\frac{48}{6} =$ _____

Fill in the unknown number to make the division problem true.

16. $12 \div$ _____ $= 2$

17. If it took Marie six minutes to play a song on her harp, how many songs could she play in one hour? (1 hour = 60 minutes) _____

18. Roger earned $54 in six hours. How much did he earn each hour? _____

LESSON PRACTICE

Answer the questions.

1. How many sixes can you count out of fifty-four? _____

2. How many sixes can you count out of thirty-six? _____

3. How many sixes can you count out of sixty? _____

4. How many sixes can you count out of forty-two? _____

Divide.

5. $6\overline{)18}$

6. $6\overline{)54}$

7. $6\overline{)6}$

8. $6\overline{)30}$

9. $6\overline{)12}$

10. $6\overline{)24}$

11. $42 \div 6 =$ _____

12. $36 \div 6 =$ _____

13. $48 \div 6 =$ _____

14. $\frac{60}{6} =$ _____

15. $\frac{54}{6} =$ _____

16. $\frac{12}{6} =$ _____

17. Shane has $48 to spend on Christmas gifts for six of his friends. How much will he be able to spend on each friend? _____

18. A carpenter has a board that is 18 feet long. If he saws it into six equal lengths, how many feet long will each piece be? _____

    How many yards long is each piece? _____

SYSTEMATIC REVIEW

Divide.

1. $6\overline{)18}$

2. $6\overline{)42}$

3. $6\overline{)54}$

4. $3\overline{)24}$

5. $5\overline{)25}$

6. $2\overline{)18}$

7. $9\overline{)54}$

8. $10\overline{)60}$

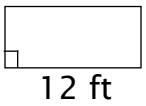
9. $48 \div 6 =$ _____

10. $72 \div 9 =$ _____

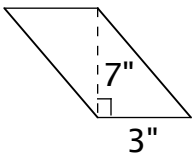
11. $\frac{21}{3} =$ _____

12. $\frac{35}{5} =$ _____

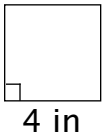
Find the area.

13. 

A = _____

14. 

A = _____

15. 

A = _____

QUICK REVIEW

Place-value notation can be used to check your work when multiplying. Be sure to place each "carry" in the proper column. Study the example.

Example 1

$$
\begin{array}{r}
1\ 4 \\
\times\ 1\ 7 \\
\hline
\textcircled{2} \\
7\ 8 \\
\textcircled{1} \\
1\ 4 \\
\hline
2\ 3\ 8
\end{array}
\qquad
\begin{array}{r}
10 + 4 \\
\times \qquad 10 + 7 \\
\hline
\textcircled{20} \\
70 + 8 \\
\textcircled{100} \\
100 + 40 + \\
\hline
200 + 30 + 8
\end{array}
$$

Multiply. Check your work with place-value notation.

16. $\begin{array}{r} 2\ 3 \\ \times\ 3\ 6 \\ \hline \end{array}$

17. $\begin{array}{r} 7\ 8 \\ \times\ 3\ 4 \\ \hline \end{array}$

18. $\begin{array}{r} 6\ 5 \\ \times\ 1\ 5 \\ \hline \end{array}$

19. Each of the 12 white mice had 15 babies. How many baby mice is that? ______

20. The area of a rectangle is 45 square feet, and the area of a parallelogram is 61 square feet. What is the difference between their areas? ______

21. Sophie bought 36 skeins of yarn. If she uses six skeins for each afghan, how many afghans can she make? ______

22. Kevin earned $39 yesterday and $28 today. How much did he earn in all? ______

Divide.

1. $6\overline{)12}$

2. $6\overline{)60}$

3. $6\overline{)42}$

4. $6\overline{)24}$

5. $9\overline{)27}$

6. $5\overline{)40}$

7. $10\overline{)20}$

8. $3\overline{)12}$

9. $15 \div 3 =$ _____

10. $30 \div 6 =$ _____

11. $\frac{6}{6} =$ _____

12. $\frac{12}{2} =$ _____

Add or subtract.

13. $\begin{array}{r} 13 \\ +\,19 \\ \hline \end{array}$

14. $\begin{array}{r} 28 \\ +\,49 \\ \hline \end{array}$

15. $\begin{array}{r} 72 \\ -\,26 \\ \hline \end{array}$

16. $\begin{array}{r} 47 \\ -\,38 \\ \hline \end{array}$

Multiply. Check your work with place-value notation.

17. $\begin{array}{r} 45 \\ \times\,22 \\ \hline \end{array}$

18. $\begin{array}{r} 16 \\ \times\,14 \\ \hline \end{array}$

19. $\begin{array}{r} 39 \\ \times\,\;5 \\ \hline \end{array}$

20. Don bought 30 feet of cable for a dog run. How many yards long will his dog run be? _____

    If the cost of the cable is $6 a yard, what is the total cost? _____

21. A parallelogram has a base of 14 inches and a height of 18 inches. What is its area? _____

22. Paul drove 46 miles this morning and 28 miles this afternoon. How many miles did he drive today? _____

SYSTEMATIC REVIEW

Divide.

1. $6\overline{)48}$

2. $6\overline{)18}$

3. $6\overline{)12}$

4. $6\overline{)36}$

5. $9\overline{)72}$

6. $6\overline{)54}$

7. $3\overline{)27}$

8. $5\overline{)45}$

9. $70 \div 10 =$ _____

10. $16 \div 2 =$ _____

11. $\frac{42}{6} =$ _____

12. $\frac{60}{6} =$ _____

Add or subtract.

13. $\begin{array}{r} 85 \\ +\,18 \\ \hline \end{array}$

14. $\begin{array}{r} 47 \\ -\,38 \\ \hline \end{array}$

15. $\begin{array}{r} 49 \\ +\,21 \\ \hline \end{array}$

16. $\begin{array}{r} 64 \\ -\,25 \\ \hline \end{array}$

Multiply. Check your work with place value-notation.

17. $\begin{array}{r} 33 \\ \times\,24 \\ \hline \end{array}$

18. $\begin{array}{r} 44 \\ \times\,14 \\ \hline \end{array}$

19. $\begin{array}{r} 15 \\ \times\,15 \\ \hline \end{array}$

20. Twenty-four people are lined up for a ride at the fair. If six people can ride at one time, how many turns will be needed to give everyone a ride? _____

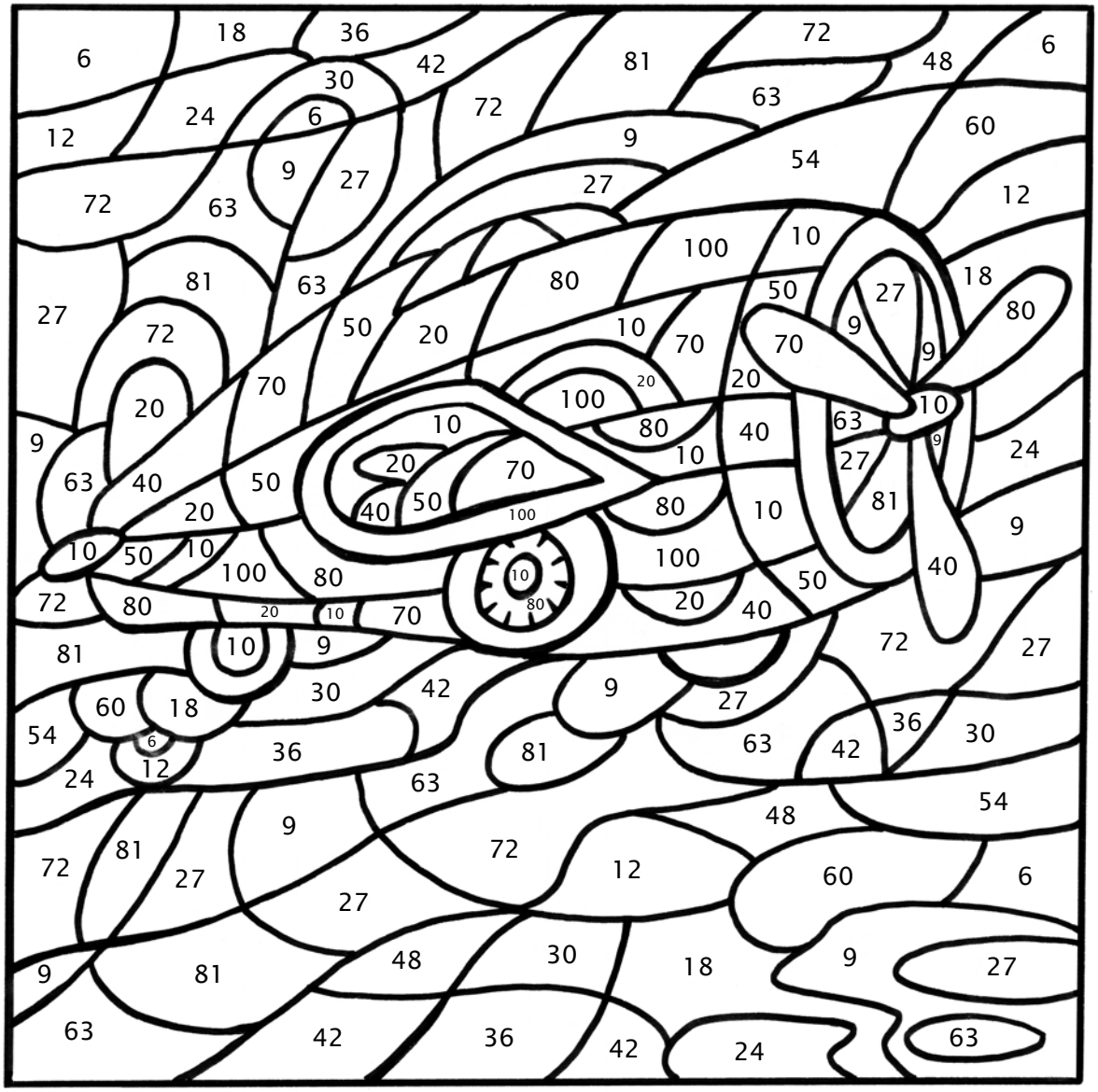
21. Mr. Rich made $35 an hour. If he worked for 14 hours, how much did he earn? _____

22. A parallelogram has an area of 42 square feet. If the height is six feet, what is the length of the base? (divide) _____

APPLICATION & ENRICHMENT

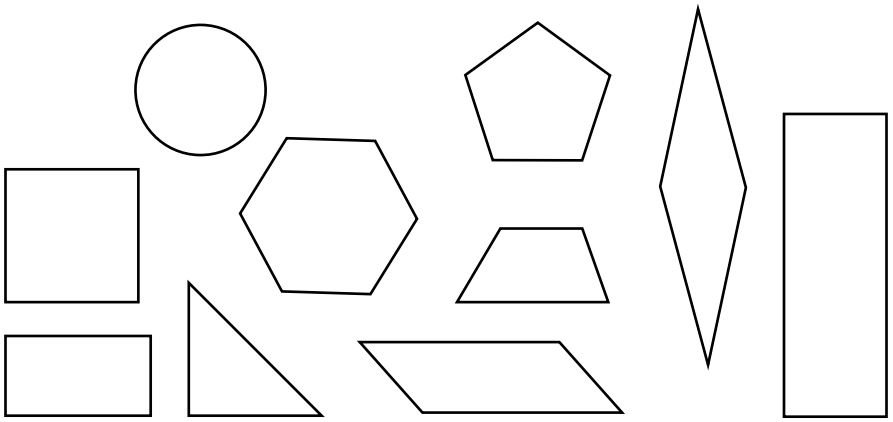
Color the picture. Complete each step in the order given for best results. If you have already colored a number, do not color it again in the next step.

If the number has six as a factor, color the space lavender or purple.
If the number has 10 but not six as a factor, color the space blue.
If the number has nine but not six as a factor, color the space red.
If there is no number, leave the space white.



Quadrilateral is a big word that means "four sides." Parallelograms, rectangles, and squares are all quadrilaterals. There are other kinds of quadrilaterals as well.

1. Put a black X on every shape that is not a quadrilateral.



A quadrilateral with two sets of parallel sides is a ***parallelogram.*** Some parallelograms have square corners and some do not.

2. Draw a red circle around the parallelograms.

   How many parallelograms did you find? _____

A parallelogram with four square corners or right angles is a ***rectangle.***

3. Draw green circles around the rectangles. Some shapes will have both red and green circles.

   How many rectangles did you find? _____

4. A square is a special rectangle that has all four sides the same length. Color the square blue.

Divide.

1. $6\overline{)12}$

2. $6\overline{)24}$

3. $6\overline{)54}$

4. $6\overline{)30}$

5. $6\overline{)42}$

6. $6\overline{)48}$

7. $6\overline{)18}$

8. $6\overline{)36}$

9. $72 \div 9 =$ _____

10. $20 \div 5 =$ _____

11. $\frac{8}{2} =$ _____

12. $\frac{27}{3} =$ _____

Add or subtract.

13. $\begin{array}{r} 23 \\ -\ 5 \\ \hline \end{array}$

14. $\begin{array}{r} 72 \\ +\ 19 \\ \hline \end{array}$

15. $\begin{array}{r} 53 \\ -\ 45 \\ \hline \end{array}$

Multiply.

16. $\begin{array}{r} 22 \\ \times\ 13 \\ \hline \end{array}$

17. $\begin{array}{r} 45 \\ \times\ 24 \\ \hline \end{array}$

18. $\begin{array}{r} 16 \\ \times\ 37 \\ \hline \end{array}$

19. Jeremy was bored, so he counted people's feet as they walked by. If he counted 20 feet, how many people had gone by? _____

20. A parallelogram has an area of 36 square feet. If the height is six feet, what is the length of the base? _____

10. $8 \div 1 = \underline{8}$

11. $\frac{81}{9} = \underline{9}$

12. $\frac{21}{3} = \underline{7}$

13. $4 \times \underline{6} = 24$

14. $6 \times \underline{10} = 60$

15. $6 \times \underline{7} = 42$

16. $4 \times \underline{7} = 28$

17.
$$\begin{array}{r} 71 \\ +62 \\ \hline 133 \end{array}$$

18.
$$\begin{array}{r} {}^{3}\cancel{4}\,{}^{1}3 \\ -\ 2\ 5 \\ \hline 1\ 8 \end{array}$$

19.
$$\begin{array}{r} 92 \\ +11 \\ \hline 103 \end{array}$$

20.
$$\begin{array}{r} {}^{1} \\ 57 \\ +46 \\ \hline 103 \end{array}$$

21. parallel

22. $5 \times 3 = 15$ sq yd

Systematic Review 7F

1. $6 \times 7 = 42$ sq ft

2. $3 \times 8 = 24$ sq in

3. $10 \times 9 = 90$ sq ft

4. $3 \times 3 = 9$ sq mi

5. $27 \div 9 = \underline{3}$

6. $15 \div 3 = \underline{5}$

7. $30 \div 5 = \underline{6}$

8. $16 \div 2 = \underline{8}$

9. $72 \div 9 = \underline{8}$

10. $90 \div 10 = \underline{9}$

11. $\frac{20}{2} = \underline{10}$

12. $\frac{45}{9} = \underline{5}$

13. $4 \times \underline{8} = 32$

14. $6 \times \underline{8} = 48$

15. $6 \times \underline{6} = 36$

16. $4 \times \underline{4} = 16$

17.
$$\begin{array}{r} {}^{1}\cancel{2}\,{}^{1}1 \\ -\ \ 9 \\ \hline 1\ 2 \end{array}$$

18.
$$\begin{array}{r} {}^{1} \\ 76 \\ +54 \\ \hline 130 \end{array}$$

19.
$$\begin{array}{r} 33 \\ +45 \\ \hline 78 \end{array}$$

20.
$$\begin{array}{r} {}^{5}\cancel{6}\,{}^{1}4 \\ -\ 2\ 5 \\ \hline 3\ 9 \end{array}$$

21. $14 \div 2 = 7$ qt

22. $30 - 16 = 14$ books

Lesson Practice 8A

1. 6,12,18;$\underline{3}$

2. 6,12,18,24,30,36,42,48,54;$\underline{9}$

3. 6,12;$\underline{2}$

4. 6,12,18,24,30,36,42,48,54,60;$\underline{10}$

5. $12 \div 6 = \underline{2}$

6. $6 \div 6 = \underline{1}$

7. $24 \div 6 = \underline{4}$

8. $36 \div 6 = \underline{6}$

9. $42 \div 6 = \underline{7}$

10. $18 \div 6 = \underline{3}$

11. $60 \div 6 = \underline{10}$

12. $24 \div 6 = \underline{4}$

13. $42 \div 6 = \underline{7}$

14. $\frac{54}{6} = \underline{9}$

15. $\frac{30}{6} = \underline{5}$

16. $48 \div \underline{6} = 8$

17. $24 \div 6 = 4$ ants

18. $\$30 \div 6 = \$5$ a day

Lesson Practice 8B

1. 6,12,18,24,30;5

2. 6;1

3. 6,12,18,24;4

4. 6,12,18,24,30,36,42,48;8

5. $36 \div 6 = 6$

6. $60 \div 6 = 10$

7. $30 \div 6 = 5$

8. $18 \div 6 = 3$

9. $54 \div 6 = 9$

10. $42 \div 6 = 7$

11. $6 \div 6 = 1$

12. $24 \div 6 = 4$

13. $18 \div 6 = 3$

14. $\frac{30}{6} = 5$

15. $\frac{48}{6} = 8$

16. $12 \div 6 = 2$

17. $60 \div 6 = 10$ songs

18. $\$54 \div 6 = \$9$ each hour

Lesson Practice 8C

1. 6,12,18,24,30,36,42,48,54;9

2. 6,12,18,24,30,36;6

3. 6,12,18,24,30,36,42,48,54,60;10

4. 6,12,18,24,30,36,42;7

5. $18 \div 6 = 3$

6. $54 \div 6 = 9$

7. $6 \div 6 = 1$

8. $30 \div 6 = 5$

9. $12 \div 6 = 2$

10. $24 \div 6 = 4$

11. $42 \div 6 = 7$

12. $36 \div 6 = 6$

13. $48 \div 6 = 8$

14. $\frac{60}{6} = 10$

15. $\frac{54}{6} = 9$

16. $\frac{12}{6} = 2$

17. $\$48 \div 6 = \$8$ per friend

18. $18 \div 6 = 3$ ft
$3 \div 3 = 1$ yd

Systematic Review 8D

1. $18 \div 6 = 3$

2. $42 \div 6 = 7$

3. $54 \div 6 = 9$

4. $24 \div 3 = 8$

5. $25 \div 5 = 5$

6. $18 \div 2 = 9$

7. $54 \div 9 = 6$

8. $60 \div 10 = 6$

9. $48 \div 6 = 8$

10. $72 \div 9 = 8$

11. $\frac{21}{3} = 7$

12. $\frac{35}{5} = 7$

13. $12 \times 6 = 72$ sq ft

14. $7 \times 3 = 21$ sq in

15. $4 \times 4 = 16$ sq in

16.

$$\begin{array}{r} 23 \\ \times 36 \\ \hline 11 \\ 128 \\ 69 \\ \hline 828 \end{array} \qquad \begin{array}{r} 20+3 \\ \times \quad 30+6 \\ \hline 100 \quad 10 \\ 100+20+8 \\ 600+90+ \\ \hline 800+20+8 \end{array}$$

17.

$$\begin{array}{r} 78 \\ \times 34 \\ \hline 1 \\ 23 \\ 282 \\ 214 \\ \hline 2652 \end{array} \qquad \begin{array}{r} 70+8 \\ \times 30+4 \\ \hline {}^{100}200 \quad 30 \\ 200 +80+2 \\ 2000+ 100 +40 \\ \hline 2000+ 600 +50+2 \end{array}$$

18.

$$\begin{array}{r} 65 \\ \times 15 \\ \hline 2 \\ 305 \\ 65 \\ \hline 975 \end{array} \qquad \begin{array}{r} 60+5 \\ \times 10+5 \\ \hline 20 \\ 300+00+5 \\ 600+50+ \\ \hline 900+70+5 \end{array}$$

19. $12 \times 15 = 180$ baby mice

20. $61 - 45 = 16$ sq ft

21. $36 \div 6 = 6$ afghans

22. $\$39 + \$28 = \$67$

Systematic Review 8E

1. $12 \div 6 = \underline{2}$

2. $60 \div 6 = \underline{10}$

3. $42 \div 6 = \underline{7}$

4. $24 \div 6 = \underline{4}$

5. $27 \div 9 = \underline{3}$

6. $40 \div 5 = \underline{8}$

7. $20 \div 10 = \underline{2}$

8. $12 \div 3 = \underline{4}$

9. $15 \div 3 = \underline{5}$

10. $30 \div 6 = \underline{5}$

11. $\frac{6}{6} = \underline{1}$

12. $\frac{12}{2} = \underline{6}$

13.
$$\begin{array}{r} {\scriptstyle 1} \\ 13 \\ +19 \\ \hline 32 \end{array}$$

14.
$$\begin{array}{r} {\scriptstyle 1} \\ 28 \\ +49 \\ \hline 77 \end{array}$$

15.
$$\begin{array}{r} {\scriptstyle 6}\not{7}\ {\scriptstyle 1}2 \\ -\ 2\ 6 \\ \hline 4\ 6 \end{array}$$

16.
$$\begin{array}{r} {\scriptstyle 3}\not{4}\ {\scriptstyle 1}7 \\ -\ 3\ 8 \\ \hline 9 \end{array}$$

17.
$$\begin{array}{r} 45 \\ \times 22 \\ \hline {\scriptstyle 1} \\ 180 \\ 80 \\ \hline 990 \end{array} \qquad \begin{array}{r} 40+5 \\ \times 20+2 \\ \hline {\scriptstyle 10} \\ 100\ \ 80+0 \\ 800+00+ \\ \hline 900+90+0 \end{array}$$

18.
$$\begin{array}{r} 16 \\ \times 14 \\ \hline {\scriptstyle 2} \\ 144 \\ 16 \\ \hline 224 \end{array} \qquad \begin{array}{r} 10+6 \\ \times 10+4 \\ \hline {\scriptstyle 20} \\ 100+40+4 \\ 100\ \ 60+ \\ \hline 200+20+4 \end{array}$$

19.
$$\begin{array}{r} 39 \\ \times\ 5 \\ \hline {\scriptstyle 14} \\ 55 \\ \hline 195 \end{array} \qquad \begin{array}{r} 30+9 \\ \times\ \ \ 5 \\ \hline {\scriptstyle 100\ \ 40} \\ +50+5 \\ \hline 100+90+5 \end{array}$$

20. $30 \div 3 = 10$ yd
$\$6 \times 10 = \$60$

21. $14 \times 18 = 252$ sq in

22. $46 + 28 = 74$ mi

Systematic Review 8F

1. $48 \div 6 = \underline{8}$

2. $18 \div 6 = \underline{3}$

3. $12 \div 6 = \underline{2}$

4. $36 \div 6 = \underline{6}$

5. $72 \div 9 = \underline{8}$

6. $54 \div 6 = \underline{9}$

7. $27 \div 3 = \underline{9}$

8. $45 \div 5 = \underline{9}$

9. $70 \div 10 = \underline{7}$

10. $16 \div 2 = \underline{8}$

11. $\frac{42}{6} = \underline{7}$

12. $\frac{60}{6} = \underline{10}$

13.
$$\begin{array}{r} {\scriptstyle 1}8\ 5 \\ +\ 1\ 8 \\ \hline 1\ 0\ 3 \end{array}$$

14.
$$\begin{array}{r} {\scriptstyle 3}\not{4}\ {\scriptstyle 1}7 \\ -\ 3\ 8 \\ \hline 9 \end{array}$$

15.
$$\begin{array}{r} {\scriptstyle 1}4\ 9 \\ +\ 2\ 1 \\ \hline 7\ 0 \end{array}$$

16.
$$\begin{array}{r} {\scriptstyle 5}\not{6}\ {\scriptstyle 1}4 \\ -\ 2\ 5 \\ \hline 3\ 9 \end{array}$$

17.
$$\begin{array}{r} 33 \\ \times 24 \\ \hline {\scriptstyle 1} \\ 122 \\ 66 \\ \hline 792 \end{array} \qquad \begin{array}{r} 30+3 \\ \times 20+4 \\ \hline {\scriptstyle 10} \\ 100+20+2 \\ 600+60+ \\ \hline 700+90+2 \end{array}$$

18.
$$\begin{array}{r} 44 \\ \times 14 \\ \hline 11 \\ 166 \\ 44 \\ \hline 616 \end{array} \qquad \begin{array}{r} 40+4 \\ \times 10+4 \\ \hline 100 \quad 10 \\ 100+60+6 \\ 400+40+ \\ \hline 600+10+6 \end{array}$$

19.
$$\begin{array}{r} 15 \\ \times 15 \\ \hline 12 \\ 55 \\ 15 \\ \hline 225 \end{array} \qquad \begin{array}{r} 10+5 \\ \times 10+5 \\ \hline 100 \quad 20 \\ +50+5 \\ 100+50+ \\ \hline 200+20+5 \end{array}$$

20. $24 \div 6 = 4$ turns

21. $\$35 \times 14 = \$490$

22. $42 \div 6 = 7$ ft

Lesson Practice 9A

1. done

2. $4 \times 4 = 16$
$16 \div 2 = 8$ sq in

3. $2 \times 7 = 14$
$14 \div 2 = 7$ sq mi

4. $3 \times 6 = 18$
$18 \div 2 = 9$ sq ft

5. $4 \times 5 = 20$
$20 \div 2 = 10$ sq in

6. $9 \times 2 = 18$
$18 \div 2 = 9$ sq ft

7. $8 \times 2 = 16$
$16 \div 2 = 8$ sq yd

8. $1 \times 2 = 2$
$2 \div 2 = 1$ sq in

9. $2 \times 2 = 4$
$4 \div 2 = 2$ sq mi

10. $2 \times 4 = 8$
$8 \div 2 = 4$ sq in

Lesson Practice 9B

1. $3 \times 4 = 12$
$12 \div 2 = 6$ sq ft

2. $2 \times 6 = 12$
$12 \div 2 = 6$ sq in

3. $1 \times 8 = 8$
$8 \div 2 = 4$ sq mi

4. $2 \times 10 = 20$
$20 \div 2 = 10$ sq ft

5. $2 \times 5 = 10$
$10 \div 2 = 5$ sq in

6. $10 \times 1 = 10$
$10 \div 2 = 5$ sq in

7. $2 \times 3 = 6$
$6 \div 2 = 3$ sq yd

8. $3 \times 6 = 18$
$18 \div 2 = 9$ sq ft

9. $3 \div 3 = 1$ yd
$6 \div 3 = 2$ yd

10. $2 \times 1 = 2$
$2 \div 2 = 1$ sq yd

Lesson Practice 9C

1. $1 \times 4 = 4$
$4 \div 2 = 2$ sq ft

2. $2 \times 5 = 10$
$10 \div 2 = 5$ sq in

3. $2 \times 9 = 18$
$18 \div 2 = 9$ sq mi

4. $4 \times 4 = 16$
$16 \div 2 = 8$ sq ft

5. $2 \times 8 = 16$
$16 \div 2 = 8$ sq in

6. $2 \times 4 = 8$
$8 \div 2 = 4$ sq in

7. $2 \times 2 = 4$
$4 \div 2 = 2$ sq yd

8. $2 \times 7 = 14$
$14 \div 2 = 7$ sq ft

9. $4 \times 3 = 12$
$12 \div 2 = 6$ sq ft
so 6 plants

10. $6 \times 3 = 18$
$18 \div 2 = 9$ sq yd

Application & Enrichment 1G

wind-up mouse.

1. Final answer is 120 (given).
2. Final answer is 486.
3. Final answer is 280.
4. Final answer is 576.

Application & Enrichment 2G

space shuttle

1. 10
2. 9
3. 2
4. 5
5. 2
6. 5
7. 1
8. 10
9. 3
10. 5
11. 2
12. 2
13. 4
14. 3
15. 2
16. 1
17. 4
18. 5
19. 8
20. 7

Application & Enrichment 3G

boat

1. divide
2. multiply
3. divide
4. divide
5. multiply

Application & Enrichment 4G

music box figure

1. 5A = 15 or 15 ÷ 5 = A
   A = 3
2. 3B = 30 or 30 ÷ 3 = B
   B = 10
   Students may use any letter they like for the unknown.
3. 2D = 12 or 12 ÷ 2 = D
   D = 6
4. 8H = 80 or 80 ÷ 8 = H
   H = 10

Application & Enrichment 5G

1. line segment —
2. point •
3. ray →
4. line ↔
5. point
6. line segment
7. ray
8. line

Application & Enrichment 6G

clock

These answers may be in any order.
8 × 3, 6 × 4, 4 × 6, 3 × 8

Application & Enrichment 7G

6 inches × 4 inches = 24 square inches

Application & Enrichment 8G

airplane

1. Put a black X on the four shapes that do not have four sides
2. Five parallelograms. They all have two sets of parallel sides.
3. Three rectangles. They all have four right angles.

4. One square. All four sides are the same length.
   The unmarked figure is a trapezoid.

Application & Enrichment 9G

1. 90° + 90° + 90° + 90° = 360°
   Yes
2. 3 × 45° = 135° or 45° + 45° + 45° = 135°
   Smaller angles may be added to find the measure of larger angles.

1. There are two obtuse angles.
2. There are two right angles.
3. Use the definitions to check the angles. They may be turned in any direction.
4. 90° – 75° = 15°, so D = 15°

Application & Enrichment 10G

hot air balloon

1. always
2. more likely
3. always
4. never
5. less likely

Application & Enrichment 11G

1. Smith:
   1 + 2 + 7 + 10 = 20; 20 ÷ 4 = 5
   Jones:
   4 + 5 + 6 = 15; 15 ÷ 3 = 5
   Smith = Jones
2. Chloe:
   6 + 7 + 9 = 21; 21 ÷ 3 = 7
   Tucker:
   1 + 2 + 12 = 15; 15 ÷ 3 = 5
   Chloe > Tucker
3. Timothy:
   1 + 2 + 3 = 6 ÷ 3 = 2
   Peter:
   0 + 2 + 10 = 12; 12 ÷ 3 = 4
   Timothy < Peter

number of row	1	2	3	4	5	6	7	8
number of boxes in that row	1	2	3	4	5	6	7	8
total number of boxes	1	3	6	10	15	21	28	36

1. They are the same.
2. Add the number of boxes in each new row to the total number of boxes in the previous rows.
   Or, just looking at the bottom row, add a number that is one more each time: 1 + **2** = 3, 3 + **3** = 6, 6 + **4** = 10, 10 + **5** = 15, etc. There may be other ways to describe the patterns in the chart.

number of triangles	1	2	3	4	5	6	7
number of toothpicks	3	5	7	9	11	13	15

3. 13 toothpicks
4. 21 toothpicks. Each new triangle needs two new toothpicks. Comparing the top and bottom rows of the chart, double the number of triangles and add one to find the number of toothpicks needed. Experimenting with this is more important than finding the exact answer without help.

21. $50 \div 5 = 10$
22. $9 \div 3 = 3$
23. $9 \div 9 = 1$
24. $27 \div 3 = 9$
25. $90 \div 10 = 9$
26. $15 \div 3 = 5$
27. $12 \div 2 = 6$
28. $4 \div 1 = 4$
29. $40 \div 5 = 8$
30. $54 \div 9 = 6$
31. $70 \div 10 = 7$
32. $15 \div 5 = 3$
33. $45 \div 5 = 9$
34. $30 \div 3 = 10$
35. $5 \div 1 = 5$
36. $100 \div 10 = 10$
37. $9 \div 1 = 9$
38. $20 \div 5 = 4$
39. $72 \div 9 = 8$
40. $20 \div 2 = 10$
41. $6 \div 3 = 2$
42. $10 \div 5 = 2$
43. $18 \div 9 = 2$
44. $35 \div 5 = 7$
45. $8 \div 2 = 4$
46. $80 \div 10 = 8$
47. $8 \div 1 = 8$
48. $3 \div 3 = 1$
49.
$$\begin{array}{r} {}^{1}5\,6 \\ +\,3\,9 \\ \hline 9\,5 \end{array}$$
50.
$$\begin{array}{r} {}^{5}\cancel{6}\,{}^{1}2 \\ -\;2\,5 \\ \hline 3\,7 \end{array}$$
51.
$$\begin{array}{r} {}^{7}\cancel{8}\,{}^{1}1 \\ -\;4\,6 \\ \hline 3\,5 \end{array}$$
52. $\parallel$
53. $\perp$
54. $8 \times 9 = 72$ sq ft
55. $5 \times 3 = 15$ ft
56. $27 \div 3 = 9$ yd
57. $6 \times 2 = 12$ pt
58. $24 \div 2 = 12$ qt

Lesson Test 7

1. $9 \times 10 = 90$ sq ft
2. $3 \times 7 = 21$ sq in
3. $36 \div 9 = 4$
4. $18 \div 3 = 6$
5. $20 \div 5 = 4$
6. $12 \div 2 = 6$
7. $81 \div 9 = 9$
8. $40 \div 10 = 4$
9. $4 \div 2 = 2$
10. $63 \div 9 = 7$
11. $6 \times \underline{2} = 12$
12. $6 \times \underline{5} = 30$
13. $6 \times \underline{9} = 54$
14. $6 \times \underline{3} = 18$
15. $6 \times \underline{7} = 42$
16. $6 \times \underline{8} = 48$
17. $6 \times \underline{4} = 24$
18. $6 \times \underline{6} = 36$
19. $25 - 16 = 9$
$9 \div 3 = 3$ cages
20. $18 \div 2 = 9$ qt

Lesson Test 8

1. $12 \div 6 = 2$
2. $24 \div 6 = 4$
3. $54 \div 6 = 9$
4. $30 \div 6 = 5$
5. $42 \div 6 = 7$
6. $48 \div 6 = 8$
7. $18 \div 6 = 3$
8. $36 \div 6 = 6$
9. $72 \div 9 = 8$
10. $20 \div 5 = 4$
11. $8 \div 2 = 4$
12. $27 \div 3 = 9$
13.
$$\begin{array}{r} {}^{1}\cancel{2}\,{}^{1}3 \\ -\quad 5 \\ \hline 1\,8 \end{array}$$

14.
$$\begin{array}{r} {}^{1}72 \\ +19 \\ \hline 91 \end{array}$$

15.
$$\begin{array}{r} {}^{4}\cancel{5}\,{}^{1}3 \\ -\,45 \\ \hline 8 \end{array}$$

16.
$$\begin{array}{r} 22 \\ \times 13 \\ \hline 66 \\ 22 \\ \hline 286 \end{array}$$

17.
$$\begin{array}{r} 45 \\ \times 24 \\ \hline {}^{12} \\ 160 \\ 80 \\ \hline 1{,}080 \end{array}$$

18.
$$\begin{array}{r} 16 \\ \times 37 \\ \hline {}^{14} \\ 172 \\ 38 \\ \hline 592 \end{array}$$

19. $20 \div 2 = 10$ people

20. $36 \div 6 = 6$ ft

Lesson Test 9

1. $4 \times 5 = 20$
$20 \div 2 = 10$ sq in

2. $7 \times 6 = 42$ sq ft

3. $3 \times 2 = 6$
$6 \div 2 = 3$ sq yd

4. $40 \div 10 = 4$

5. $12 \div 3 = 4$

6. $8 \div 2 = 4$

7. $45 \div 5 = 9$

8. $4 \times \underline{6} = 24$

9. $4 \times \underline{8} = 32$

10. $4 \times \underline{4} = 16$

11. $4 \times \underline{7} = 28$

12.
$$\begin{array}{r} 84 \\ \times 22 \\ \hline {}^{1}168 \\ 168 \\ \hline 1{,}848 \end{array}$$

13.
$$\begin{array}{r} 43 \\ \times 35 \\ \hline {}^{1}215 \\ 129 \\ \hline 1{,}505 \end{array}$$

14.
$$\begin{array}{r} 67 \\ \times 54 \\ \hline {}^{12} \\ 248 \\ 335 \\ \hline 3{,}618 \end{array}$$

15. $25 + 15 + 24 + 61 = 125$

16. $44 + 38 + 62 + 56 + 11 = 211$

17. $90 + 23 + 57 + 18 + 82 = 270$

18. no

19. $25 + 16 + 18 + 32 = 91$ animals

20. $91 \times 4 = 364$ hooves

Lesson Test 10

1. $8 \div 4 = 2$

2. $32 \div 4 = 8$

3. $16 \div 4 = 4$

4. $12 \div 4 = 3$

5. $28 \div 4 = 7$

6. $20 \div 4 = 5$

7. $36 \div 4 = 9$

8. $24 \div 4 = 6$

9. $18 \div 6 = 3$

10. $42 \div 6 = 7$

11. $30 \div 6 = 5$

12. $48 \div 6 = 8$

13. $71 + 34 + 59 + 26 = 190$

14.
$$\begin{array}{r} {}^{5}\cancel{6}\,{}^{1}5 \\ -\,39 \\ \hline 26 \end{array}$$