

# LESSON 8

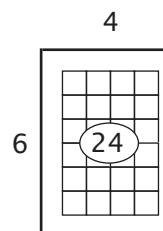
## Division by 6

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

$$\begin{array}{r} ? \\ 6 \overline{) 24} \end{array}$$

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



"What times six is equal to 24?"

"Six times what is equal to 24?"

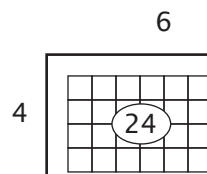
"How many sixes can I count out of 24?"

"24 divided by six equals what number?"

### Example 2

$$\begin{array}{r} ? \\ 4 \overline{) 24} \end{array}$$

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



"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?"

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

## 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.  $60 \div 6 = \underline{\hspace{2cm}}$

12.  $24 \div 6 = \underline{\hspace{2cm}}$

13.  $42 \div 6 = \underline{\hspace{2cm}}$

14.  $\frac{54}{6} = \underline{\hspace{2cm}}$

15.  $\frac{30}{6} = \underline{\hspace{2cm}}$

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

16.  $48 \div \underline{\hspace{2cm}} = 8$

17. How many ants are present if there are 24 legs? (Ants have six legs apiece.)  $\underline{\hspace{2cm}}$

18. How much must Dana earn every day in order to earn \$30 in six days?  $\underline{\hspace{2cm}}$

## 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.  $6 \div 6 = \underline{\hspace{2cm}}$

12.  $24 \div 6 = \underline{\hspace{2cm}}$

13.  $18 \div 6 = \underline{\hspace{2cm}}$

14.  $\frac{30}{6} = \underline{\hspace{2cm}}$

15.  $\frac{48}{6} = \underline{\hspace{2cm}}$

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

16.  $12 \div \underline{\hspace{2cm}} = 2$

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)  $\underline{\hspace{2cm}}$

18. Roger earned \$54 in six hours. How much did he earn each hour?  
 $\underline{\hspace{2cm}}$

## 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.  $42 \div 6 = \underline{\hspace{2cm}}$

12.  $36 \div 6 = \underline{\hspace{2cm}}$

13.  $48 \div 6 = \underline{\hspace{2cm}}$

14.  $\frac{60}{6} = \underline{\hspace{2cm}}$

15.  $\frac{54}{6} = \underline{\hspace{2cm}}$

16.  $\frac{12}{6} = \underline{\hspace{2cm}}$

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?  $\underline{\hspace{2cm}}$

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?  $\underline{\hspace{2cm}}$

How many yards long is each piece?  $\underline{\hspace{2cm}}$



## 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.  $10 \overline{) 60}$

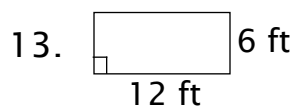
9.  $48 \div 6 = \underline{\hspace{2cm}}$

10.  $72 \div 9 = \underline{\hspace{2cm}}$

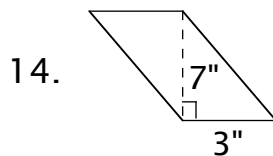
11.  $\frac{21}{3} = \underline{\hspace{2cm}}$

12.  $\frac{35}{5} = \underline{\hspace{2cm}}$

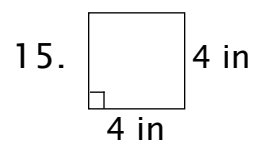
Find the area.



A =  $\underline{\hspace{2cm}}$



A =  $\underline{\hspace{2cm}}$



A =  $\underline{\hspace{2cm}}$



## 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

$\begin{array}{r} 14 \\ \times 17 \\ \hline \textcircled{2} \\ 78 \\ \textcircled{1} \\ 14 \\ \hline 238 \end{array}$	$\begin{array}{r} 10 + 4 \\ \times 10 + 7 \\ \hline \textcircled{20} \\ 70 + 8 \\ \textcircled{100} \\ 100 + 40 + \\ \hline 200 + 30 + 8 \end{array}$
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Multiply. Check your work with place-value notation.

16. 
$$\begin{array}{r} 23 \\ \times 36 \\ \hline \end{array}$$

17. 
$$\begin{array}{r} 78 \\ \times 34 \\ \hline \end{array}$$

18. 
$$\begin{array}{r} 65 \\ \times 15 \\ \hline \end{array}$$

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? \_\_\_\_\_

## SYSTEMATIC REVIEW

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.  $15 \div 3 = \underline{\hspace{1cm}}$

10.  $30 \div 6 = \underline{\hspace{1cm}}$

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

12.  $\frac{12}{2} = \underline{\hspace{1cm}}$

Add or subtract.

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

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

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

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

Multiply. Check your work with place-value notation.

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

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

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

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.  $70 \div 10 = \underline{\quad}$

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

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

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

Add or subtract.

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

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

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

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

Multiply. Check your work with place value-notation.

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

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

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

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

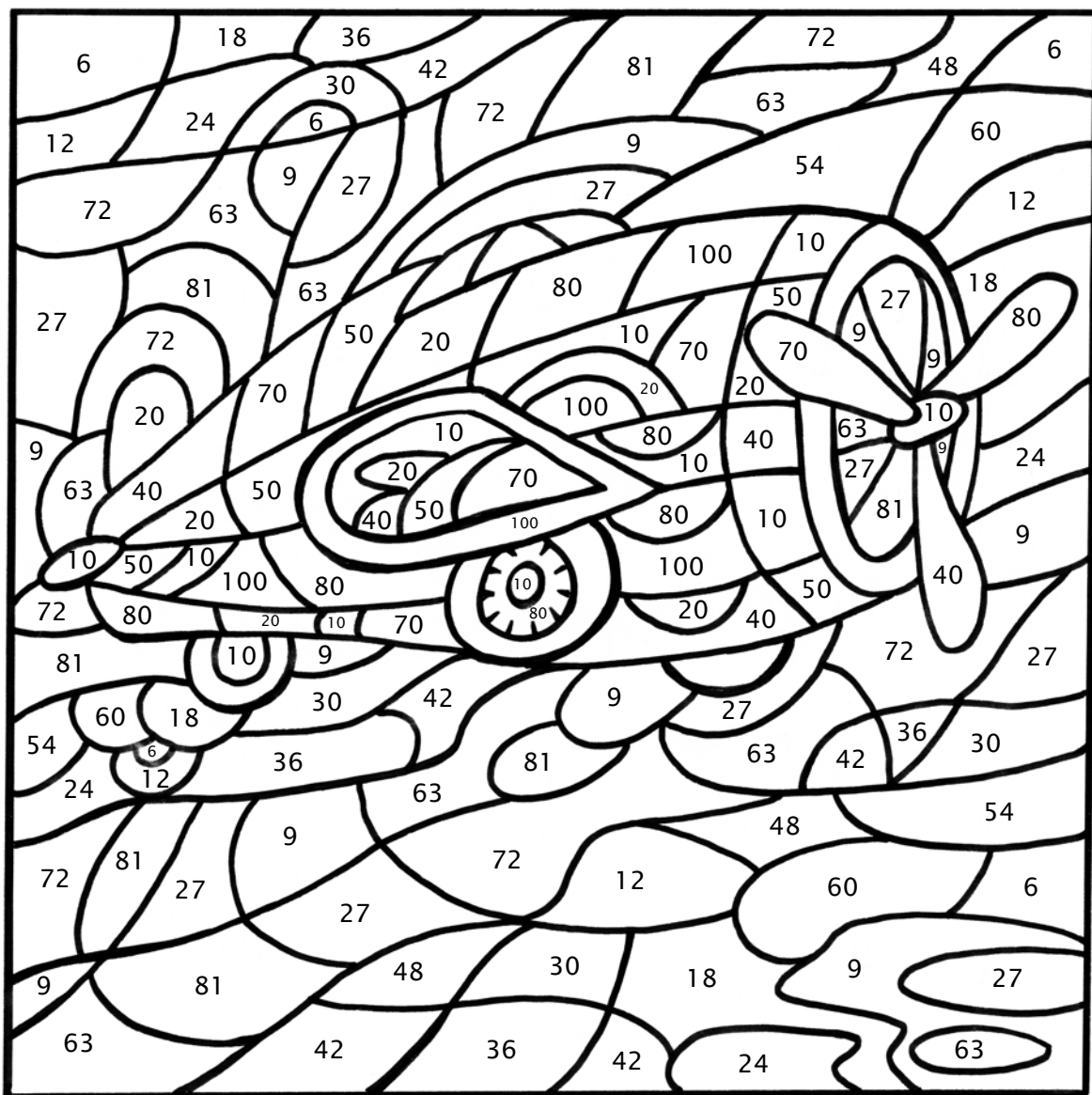
Color the picture. Complete each step in the order given for best results. If you have already colored a number, do not color it again in the next step.

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.

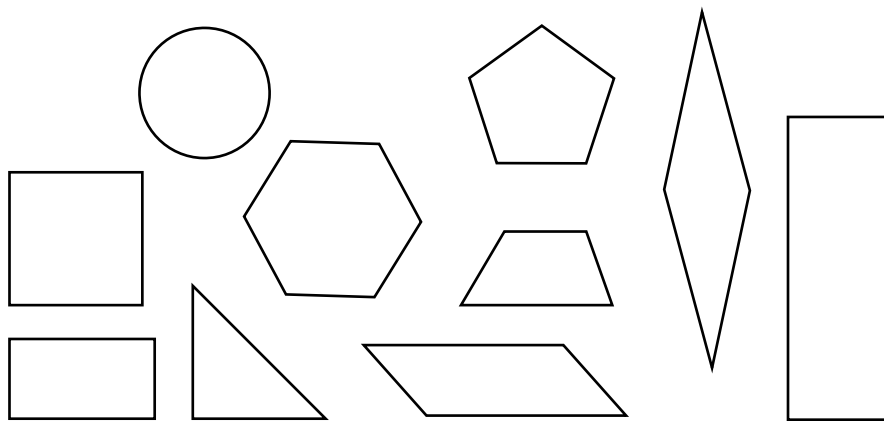
If the number has nine but not six as a factor, color the space red.

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.



## LESSON TEST

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.  $72 \div 9 = \underline{\hspace{2cm}}$

10.  $20 \div 5 = \underline{\hspace{2cm}}$

11.  $\frac{8}{2} = \underline{\hspace{2cm}}$

12.  $\frac{27}{3} = \underline{\hspace{2cm}}$

Add or subtract.

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

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

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

Multiply.

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

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

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

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. 
$$\begin{array}{r} 34 \cancel{1} 3 \\ - 25 \\ \hline 18 \end{array}$$
19. 
$$\begin{array}{r} 92 \\ +11 \\ \hline 103 \end{array}$$
20. 
$$\begin{array}{r} 57 \\ +46 \\ \hline 103 \end{array}$$
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. 
$$\begin{array}{r} 121 \\ -9 \\ \hline 12 \end{array}$$
18. 
$$\begin{array}{r} 76 \\ +54 \\ \hline 130 \end{array}$$
19. 
$$\begin{array}{r} 33 \\ +45 \\ \hline 78 \end{array}$$
20. 
$$\begin{array}{r} 56 \cancel{1} 4 \\ - 25 \\ \hline 39 \end{array}$$
21.  $14 \div 2 = 7$  qt
22.  $30 - 16 = 14$  books

### Lesson Practice 8A

1. 6,12,18;3
2. 6,12,18,24,30,36,42,48,54;9
3. 6,12;2
4. 6,12,18,24,30,36,42,48,54,60;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