

## Divisibility Rules

A number is **divisible** by another number when the quotient is a whole number and the remainder is zero.

DIVISIBILITY RULES		
Number	Rule	Example
2	The last digit must be even.	976: The ones digit is 6 and 6 is even.
3	The sum of the digits must be divisible by 3.	804: $8 + 4 = 12$ and 12 is divisible by 3.
5	The last digit must be 0 or 5.	230: The last digit is 0.
9	The sum of the digits must be divisible by 9.	432: $4 + 3 + 2 = 9$ and 9 is divisible by 9.
10	The last digit must be 0.	6,970: The last digit is 0.

Underline the digit in the ones place. Tell if the number is divisible by 2, 5, or 10. If not, write *no*.

1. 35

\_\_\_\_\_

2. 58

\_\_\_\_\_

3. 70

\_\_\_\_\_

4. 125

\_\_\_\_\_

5. 488

\_\_\_\_\_

6. 399

\_\_\_\_\_

7. 5,400

\_\_\_\_\_

8. 3,706

\_\_\_\_\_

Add the digits. If the number is divisible by 3 or 9, write the number(s). If not, write *no*.

9. 60

\_\_\_\_\_

10. 207

\_\_\_\_\_

11. 180

\_\_\_\_\_

12. 135

\_\_\_\_\_

13. 807

\_\_\_\_\_

14. 425

\_\_\_\_\_

15. 2,061

\_\_\_\_\_

16. 1,009

\_\_\_\_\_

17. Tell whether 4,110 is divisible by 2, 3, 5, 9, or 10.

\_\_\_\_\_

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9	The sum of the digits must be divisible by 9.	432: $4 + 3 + 2 = 9$ and 9 is divisible by 9.
10	The last digit must be 0.	6,970: The last digit is 0.

Underline the digit in the ones place. Tell if the number is divisible by 2, 5, or 10. If not, write *no*.

- |                    |                     |                             |                      |
|--------------------|---------------------|-----------------------------|----------------------|
| 1. 35<br><u>5</u>  | 2. 58<br><u>2</u>   | 3. 70<br><u>2, 5, 10</u>    | 4. 125<br><u>5</u>   |
| 5. 488<br><u>2</u> | 6. 399<br><u>no</u> | 7. 5,400<br><u>2, 5, 10</u> | 8. 3,706<br><u>2</u> |

Add the digits. If the number is divisible by 3 or 9, write the number(s). If not, write *no*.

- |                     |                        |                          |                        |
|---------------------|------------------------|--------------------------|------------------------|
| 9. 60<br><u>3</u>   | 10. 207<br><u>3, 9</u> | 11. 180<br><u>3, 9</u>   | 12. 135<br><u>3, 9</u> |
| 13. 807<br><u>3</u> | 14. 425<br><u>no</u>   | 15. 2,061<br><u>3, 9</u> | 16. 1,009<br><u>no</u> |

17. Tell whether 4,110 is divisible by 2, 3, 5, 9, or 10.

2, 3, 5, 10

## Divisibility Rules

### Vocabulary

Complete the sentence.

1. A number is \_\_\_\_\_ by another number when the quotient is a whole number and the remainder is zero.

Tell whether the number is divisible by 2, 3, 5, 9, or 10.

2. 36

\_\_\_\_\_

3. 160

\_\_\_\_\_

4. 225

\_\_\_\_\_

5. 420

\_\_\_\_\_

6. 189

\_\_\_\_\_

7. 792

\_\_\_\_\_

8. 1,080

\_\_\_\_\_

9. 3,465

\_\_\_\_\_

Write *true* or *false* for each statement. Explain.

10. All odd numbers are divisible by 3.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

11. All numbers that are divisible by 10 are divisible by 5.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Mixed Review

$$\begin{array}{r} 12. \quad 534 \\ - 17 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 358 \\ + 926 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 1,286 \\ - 727 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 61,048 \\ + 9,981 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 48,566 \\ - 11,527 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 32,745 \\ + 14,128 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 16,880 \\ - 7,954 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 57,638 \\ + 9,472 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 63,752 \\ - 18,436 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad 93,114 \\ + 12,748 \\ \hline \end{array}$$

Find the value of  $n$ .

22.  $n \div 2 = 11$  \_\_\_\_\_

23.  $6 \times n = 54$  \_\_\_\_\_

24.  $28 \div n = 4$  \_\_\_\_\_

25.  $132 \div n = 11$  \_\_\_\_\_

26.  $n \times 7 = 56$  \_\_\_\_\_

27.  $60 \div n = 12$  \_\_\_\_\_

28.  $8 \times n = 6 \times 4$  \_\_\_\_\_

29.  $n \times 4 = 6 \times 6$  \_\_\_\_\_

30.  $n \div 5 = 30 \div 3$  \_\_\_\_\_

## Divisibility Rules

### Vocabulary

Complete the sentence.

1. A number is **divisible** by another number when the quotient is a whole number and the remainder is zero.

Tell whether the number is divisible by 2, 3, 5, 9, or 10.

- |                         |                           |                                   |                              |
|-------------------------|---------------------------|-----------------------------------|------------------------------|
| 2. 36<br><u>2, 3, 9</u> | 3. 160<br><u>2, 5, 10</u> | 4. 225<br><u>3, 5, 9</u>          | 5. 420<br><u>2, 3, 5, 10</u> |
| 6. 189<br><u>3, 9</u>   | 7. 792<br><u>2, 3, 9</u>  | 8. 1,080<br><u>2, 3, 5, 9, 10</u> | 9. 3,465<br><u>3, 5, 9</u>   |

Write *true* or *false* for each statement. Explain.

- |   |   |
|---|---|
| 10. All odd numbers are divisible by 3.<br><b>False; Possible answer: the sum of the digits must be divisible by 3.</b> | 11. All numbers that are divisible by 10 are divisible by 5.<br><b>True; Possible answer: all multiples of 10 have a last digit of 0.</b> |
|---|---|

### Mixed Review

- |  |  |   |  |   |
|--|--|---|--|---|
| 12. $\begin{array}{r} 534 \\ - 17 \\ \hline 517 \end{array}$           | 13. $\begin{array}{r} 358 \\ + 926 \\ \hline 1,284 \end{array}$      | 14. $\begin{array}{r} 1,286 \\ - 727 \\ \hline 559 \end{array}$       | 15. $\begin{array}{r} 61,048 \\ + 9,981 \\ \hline 71,029 \end{array}$  | 16. $\begin{array}{r} 48,566 \\ - 11,527 \\ \hline 37,039 \end{array}$  |
| 17. $\begin{array}{r} 32,745 \\ + 14,128 \\ \hline 46,873 \end{array}$ | 18. $\begin{array}{r} 16,880 \\ - 7,954 \\ \hline 8,926 \end{array}$ | 19. $\begin{array}{r} 57,638 \\ + 9,472 \\ \hline 67,110 \end{array}$ | 20. $\begin{array}{r} 63,752 \\ - 18,436 \\ \hline 45,316 \end{array}$ | 21. $\begin{array}{r} 93,114 \\ + 12,748 \\ \hline 105,862 \end{array}$ |

Find the value of  $n$ .

- |   |   |   |
|---|---|---|
| 22. $n \div 2 = 11$ <b><math>n = 22</math></b>          | 23. $6 \times n = 54$ <b><math>n = 9</math></b>         | 24. $28 \div n = 4$ <b><math>n = 7</math></b>         |
| 25. $132 \div n = 11$ <b><math>n = 12</math></b>        | 26. $n \times 7 = 56$ <b><math>n = 8</math></b>         | 27. $60 \div n = 12$ <b><math>n = 5</math></b>        |
| 28. $8 \times n = 6 \times 4$ <b><math>n = 3</math></b> | 29. $n \times 4 = 6 \times 6$ <b><math>n = 9</math></b> | 30. $n \div 5 = 30 \div 3$ <b><math>n = 50</math></b> |

## Divisible by 6

A number is divisible by 2 if the last digit of the number is even.

A number is divisible by 3 if the sum of the digits is divisible by 3.

A number is **divisible by 6** if it is divisible by 2 and by 3.

Example: 24 is divisible by 2 since 4 is even.

24 is divisible by 3 since  $2 + 4 = 6$  and 6 is divisible by 3.

Since 24 is divisible by 2 and by 3, it is also divisible by 6.

---

Is the number divisible by 2, by 3, or by 6? Write **yes** or **no**.

1. 36      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

2. 45      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

3. 72      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

4. 102      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

5. 135      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

6. 146      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

7. 345      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

8. 498      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

9. 1,839      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

10. 17,286      By 2? \_\_\_\_\_

By 3? \_\_\_\_\_

By 6? \_\_\_\_\_

## Divisible by 6

A number is divisible by 2 if the last digit of the number is even.

A number is divisible by 3 if the sum of the digits is divisible by 3.

A number is **divisible by 6** if it is divisible by 2 and by 3.

Example: 24 is divisible by 2 since 4 is even.

24 is divisible by 3 since  $2 + 4 = 6$  and 6 is divisible by 3.

Since 24 is divisible by 2 and by 3, it is also divisible by 6.

---

Is the number divisible by 2, by 3, or by 6? Write **yes** or **no**.

1. 36      By 2? yes  
              By 3? yes  
              By 6? yes

2. 45      By 2? no  
              By 3? yes  
              By 6? no

3. 72      By 2? yes  
              By 3? yes  
              By 6? yes

4. 102     By 2? yes  
              By 3? yes  
              By 6? yes

5. 135     By 2? no  
              By 3? yes  
              By 6? no

6. 146     By 2? yes  
              By 3? no  
              By 6? no

7. 345     By 2? no  
              By 3? yes  
              By 6? no

8. 498     By 2? yes  
              By 3? yes  
              By 6? yes

9. 1,839   By 2? no  
              By 3? yes  
              By 6? no

10. 17,286 By 2? yes  
              By 3? yes  
              By 6? yes

## Divisibility

The rules for divisibility by 3 and 9 are special. They depend on finding the sum of the digits.

- A number is divisible by 3 if the sum of the digits of the number is divisible by 3.
  - A number is divisible by 9 if the sum of the digits of the number is divisible by 9.
- 

1. Decide if 615 is divisible by 3.

- What is the sum of the digits 6, 1, and 5? \_\_\_\_\_
- Is 12 divisible by 3? \_\_\_\_\_
- Is 615 divisible by 3? \_\_\_\_\_

2. Decide if 615 is divisible by 9.

- What is the sum of the digits 6, 1, and 5? \_\_\_\_\_
- Is 12 divisible by 9? \_\_\_\_\_
- Is 615 divisible by 9? \_\_\_\_\_

Tell if each number is divisible by 3 or 9. Write 3, 9, or neither.

3. 90

\_\_\_\_\_

4. 315

\_\_\_\_\_

5. 390

\_\_\_\_\_

6. 405

\_\_\_\_\_

7. 75

\_\_\_\_\_

8. 4,770

\_\_\_\_\_

9. 320

\_\_\_\_\_

10. 3,705

\_\_\_\_\_

11. 801

\_\_\_\_\_

12. 408

\_\_\_\_\_

13. 117

\_\_\_\_\_

14. 490

\_\_\_\_\_

15. 81

\_\_\_\_\_

16. 906

\_\_\_\_\_

17. 432

\_\_\_\_\_

18. 235

\_\_\_\_\_

19. 123

\_\_\_\_\_

20. 684

\_\_\_\_\_

21. 963

\_\_\_\_\_

22. 91

\_\_\_\_\_

## Divisibility

The rules for divisibility by 3 and 9 are special. They depend on finding the sum of the digits.

- A number is divisible by 3 if the sum of the digits of the number is divisible by 3.
- A number is divisible by 9 if the sum of the digits of the number is divisible by 9.

---

1. Decide if 615 is divisible by 3.

- a. What is the sum of the digits 6, 1, and 5? 12
- b. Is 12 divisible by 3? yes
- c. Is 615 divisible by 3? yes

2. Decide if 615 is divisible by 9.

- a. What is the sum of the digits 6, 1, and 5? 12
- b. Is 12 divisible by 9? no
- c. Is 615 divisible by 9? no

Tell if each number is divisible by 3 or 9. Write 3, 9, or neither.

- |                        |                         |                          |                           |
|------------------------|-------------------------|--------------------------|---------------------------|
| 3. 90<br><u>3, 9</u>   | 4. 315<br><u>3, 9</u>   | 5. 390<br><u>3</u>       | 6. 405<br><u>3, 9</u>     |
| 7. 75<br><u>3</u>      | 8. 4,770<br><u>3, 9</u> | 9. 320<br><u>neither</u> | 10. 3,705<br><u>3</u>     |
| 11. 801<br><u>3, 9</u> | 12. 408<br><u>3</u>     | 13. 117<br><u>3, 9</u>   | 14. 490<br><u>neither</u> |
| 15. 81<br><u>3, 9</u>  | 16. 906<br><u>3</u>     | 17. 432<br><u>3, 9</u>   | 18. 235<br><u>neither</u> |
| 19. 123<br><u>3</u>    | 20. 684<br><u>3, 9</u>  | 21. 963<br><u>3, 9</u>   | 22. 91<br><u>neither</u>  |



## Divisibility

### Vocabulary

Fill in the blank.

1. A number is \_\_\_\_\_ by another number if the quotient is a whole number and the remainder is zero.

Tell if each number is divisible by 2, 3, 4, 5, 6, 9, or 10.

2. 54

\_\_\_\_\_

3. 144

\_\_\_\_\_

4. 420

\_\_\_\_\_

5. 864

\_\_\_\_\_

6. 990

\_\_\_\_\_

7. 1,224

\_\_\_\_\_

8. 3,600

\_\_\_\_\_

9. 6,618

\_\_\_\_\_

10. 234

\_\_\_\_\_

11. 684

\_\_\_\_\_

12. 1,827

\_\_\_\_\_

13. 2,475

\_\_\_\_\_

14. 675

\_\_\_\_\_

15. 288

\_\_\_\_\_

16. 842

\_\_\_\_\_

17. 540

\_\_\_\_\_

### Mixed Review

18.  $9\overline{)37}$

\_\_\_\_\_

19.  $44\overline{)794}$

\_\_\_\_\_

20.  $0.06 \div 3$

\_\_\_\_\_

21.  $0.08 \div 2$

\_\_\_\_\_

22. Marie made 3 dozen cookies. She needs to divide them evenly into groups greater than 4. What are all the possible equal-size groups into which she can divide the cookies?

\_\_\_\_\_

23. Ted needs to divide 60 stickers into equal groups. What are all the possible equal-size groups into which he can divide the stickers?

\_\_\_\_\_

\_\_\_\_\_

## Divisibility

### Vocabulary

Fill in the blank.

1. A number is \_\_\_\_\_ **divisible** \_\_\_\_\_ by another number if the quotient is a whole number and the remainder is zero.

Tell if each number is divisible by 2, 3, 4, 5, 6, 9, or 10.

2. 54

2, 3, 6, 9

3. 144

2, 3, 4, 6, 9

4. 420

2, 3, 4, 5, 6, 10

5. 864

2, 3, 4, 6, 9

6. 990

2, 3, 5, 6, 9, 10

7. 1,224

2, 3, 4, 6, 9

8. 3,600

2, 3, 4, 5, 6, 9, 10

9. 6,618

2, 3, 6

10. 234

2, 3, 6, 9

11. 684

2, 3, 4, 6, 9

12. 1,827

3, 9

13. 2,475

3, 5, 9

14. 675

3, 5, 9

15. 288

2, 3, 4, 6, 9

16. 842

2

17. 540

2, 3, 4, 5, 6, 9, 10

### Mixed Review

18.  $9 \overline{)37}$  **4 r1**

19.  $44 \overline{)794}$  **18 r2**

20.  $0.06 \div 3$

0.02

21.  $0.08 \div 2$

0.04

22. Marie made 3 dozen cookies. She needs to divide them evenly into groups greater than 4. What are all the possible equal-size groups into which she can divide the cookies?

groups of 6, 9, 12, or 18

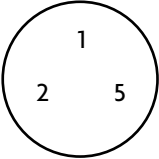
23. Ted needs to divide 60 stickers into equal groups. What are all the possible equal-size groups into which he can divide the stickers?

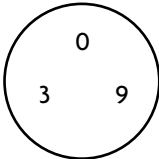
groups of 2, 3, 4, 5, 6, 10, 12,

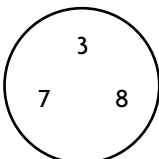
15, 20, or 30

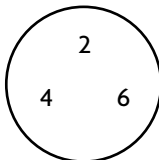
## Divisibility Rules!

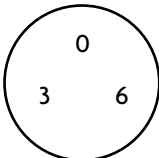
Use the digits in the circles to form numbers that are divisible by the given divisors.

1.  Numbers divisible by 2: \_\_\_\_\_  
Numbers divisible by 5: \_\_\_\_\_

2.  Numbers divisible by 3: \_\_\_\_\_  
Numbers divisible by 5: \_\_\_\_\_

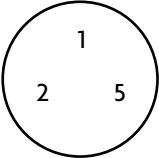
3.  Numbers divisible by 2: \_\_\_\_\_  
Numbers divisible by 9: \_\_\_\_\_

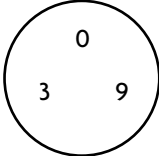
4.  Numbers divisible by 4: \_\_\_\_\_  
Numbers divisible by 6: \_\_\_\_\_

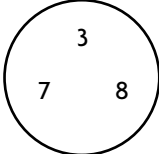
5.  Numbers divisible by 3: \_\_\_\_\_  
Numbers divisible by 4: \_\_\_\_\_

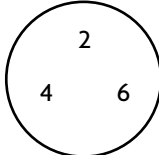
## Divisibility Rules!

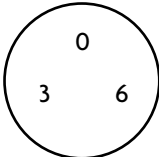
Use the digits in the circles to form numbers that are divisible by the given divisors.

1.  Numbers divisible by 2: 2, 12, 52, 152, 512  
 Numbers divisible by 5: 5, 15, 25, 125, 215

2.  Numbers divisible by 3: 3, 9, 30, 39, 90, 93, 309, 390, 903, 930  
 Numbers divisible by 5: 30, 90, 390, 930

3.  Numbers divisible by 2: 8, 38, 78, 378, 738  
 Numbers divisible by 9: 378, 387, 738, 783, 837, 873

4.  Numbers divisible by 4: 4, 24, 64, 264, 624  
 Numbers divisible by 6: 6, 24, 42, 246, 264, 426, 462, 624, 642

5.  Numbers divisible by 3: 3, 6, 30, 36, 60, 63, 306, 360, 603, 630  
 Numbers divisible by 4: 36, 60, 360