1.1 Divisibility by 10, 5, and 2

GOAL

Create and use divisibility rules to determine if 10, 5, or 2 is a factor of a whole number.

1. For each number, answer these questions:
   - Is it an even number?
   - Does it end in 5 or 0?
   - Does it end in 0?

   Then, circle the factor(s) of the number.

   a) 2458   Circle the factor(s):   10   5   **(2)**

   b) 147 905   Circle the factor(s):   10   **(5)**   2

   c) 3 324 670   Circle the factor(s):   **(10)**   **(5)**   **(2)**

   d) 21 875   Circle the factor(s):   10   **(5)**   2

   e) 190   Circle the factor(s):   **(10)**   **(5)**   **(2)**

   f) 3832   Circle the factor(s):   10   5   **(2)**

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In a multiplication operation, you multiply factors to get a product.

$$5 \times 2 = 10$$

factor   factor   product

Some Divisibility Rules
- A number that is even is divisible by 2.
- A number that ends in 5 or 0 is divisible by 5.
- A number that ends in 0 is divisible by 10.

2. Create a 4-digit number to fit each of the following rules.

   a) This number is divisible by 5 but not by 10 or 2.   **2025**

   b) This number is divisible by 2 but not by 10 or 5.   **1998**

   c) This number is divisible by 10, 5, and 2.   **4520**

3. List all the numbers between 3400 and 3500 that are divisible by 10, 5, and 2. Explain your thinking.

   3400, 3410, 3420, 3430, 3440, 3450, 3460, 3470, 3480, 3490, 3500.

1.2 Divisibility by 3 and 9

GOAL

Apply divisibility rules to determine if 3 or 9 is a factor of a whole number.

1. Which of these numbers are divisible by 3?
   Use divisibility rules.

   $7+3+1+7=18$ ✓
   a) 7317
   $1+9+3+3+3=19$
   b) 19 333 ✗
   $1+8+6+3=18$
   c) 1863 ✓

   $1+0+7+8+1=17$
   d) 10 781 ✗
   $6+7+3+9+8=33$
   e) 67 398 ✓
   $3+3+3+3+2=14$
   f) 33 332 ✗

2. Which of these numbers are divisible by 9?
   Use divisibility rules.

   $9+1+0+2=12$
   a) 9102 ✗
   $7+1+4+5+1=18$
   b) 71 451 ✓
   $2+7=9$
   c) 27 000 ✓

   $2+5+2+7+8=24$
   d) 25 278 ✗
   $8+8+2=18$
   e) 88 002 ✓
   $1+4+6+2=13$
   f) 1462 ✗

3. Determine whether each number is divisible by 3.
   Divide by 3 to check your answer.

   a) 915 $915 \div 3 = 305 \ r0$

   b) 11 100 $11100 \div 3 = 3700 \ r0$

   c) 712 233 $\frac{712\ 233}{\div\ 3} = 237411$

4. Fill in the missing digit to make each number divisible by 9.

   a) 67_3_2

   b) 256_5_

   c) 5_2_20
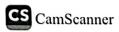
   d) _5_211

5. What is the greatest number between 5000 and 6000
   that is divisible by both 3 and 9? Explain your thinking.

   5994

1.3 Divisibility by 6

GOAL

Create and use a rule to determine if 6 is a factor of a whole number.

1. Which of these numbers is divisible by 2?
   Use divisibility rules.

   (a) 6210   c) 22 973

   (b) 73 198   **(d)** 110 736

2. Which of these numbers is divisible by 3?
   Use divisibility rules.

   (a) 9102   **(c)** 25 278

   (b) 71 451   **(d)** 88 002

3. Which of the numbers in questions 1 and 2 are also divisible by 6?

   from question 1 → 6210, 110736.

   From question 2 → 9102, 25278, 88002

4. Circle each correct factor.

   a) 1862   ② 3 5 6 9 10

   b) 25 716   ② ③ 5 ⑥ 9 10

   c) 387   2 ③ 5 6 ⑨ 10

   d) 70 000   ② 3 ⑤ 6 9 ⑩

   e) 42 831   2 ③ 5 6 ⑨ 10

   f) 2 732 445   2 ③ ⑤ 6 ⑨ 10

5. Fill in the missing digit to make each number divisible by 6.
   There may be more than one correct answer.

   a) 98 _2_ 8   b) 9 _3_ 24   c) 783 _0_   d) _1_ 062

6. Explain why no odd number is divisible by 6. Give examples.

   To be Divisible by 6

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