

Factors and Multiples

A rectangle made of squares shows a factor pair.

Write the factor pair for each rectangle. Then list all the factors.

Example

12 squares

Factors: 1, 2, 3, 4, 6, 12



$$\underline{1} \times \underline{12}$$



$$\underline{2} \times \underline{6}$$



$$\underline{3} \times \underline{4}$$

1. 18 squares

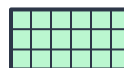
Factors: _____



$\times$



$\times$



$\times$

2. 20 squares

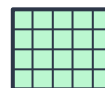
Factors: _____



$\times$



$\times$



$\times$

3. 24 squares

Factors: _____



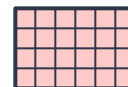
$\times$



$\times$



$\times$

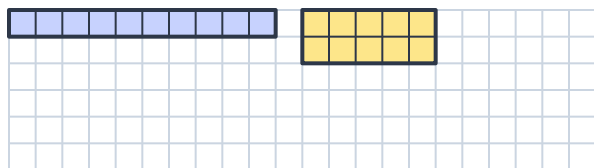


$\times$

Draw every rectangle you can make. Write each factor pair.

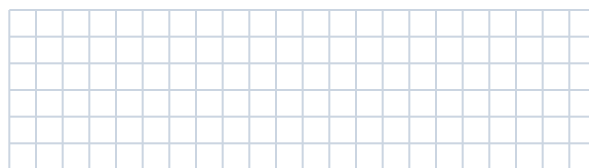
Example

10 squares



Factor pairs: 1 × 10, 2 × 5

4. 16 squares



Factor pairs: _____

Factors and Multiples

Find every factor pair. Then test some factors.

Write every factor pair in the T-chart. You may not need every row.

Example 30	1. 64	2. 84	3. 144																																																																								
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Is it a factor? Circle Yes or No. Then show how you know.

Example Is 6 a factor of 84?	☒ Yes	☐ No	How I know: $6 \times 14 = 84$
4. Is 7 a factor of 90?	Yes	No	How I know: _____
5. Is 8 a factor of 96?	Yes	No	How I know: _____
6. Is 4 a factor of 98?	Yes	No	How I know: _____

Solve each puzzle.

Example Two factors of 48 add up to 14. <u>6</u> and <u>8</u>	7. Two factors of 60 add up to 17. _____ and _____	8. Two factors of 100 add up to 29. _____ and _____
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Factors and Multiples

Skip count to find multiples. Find the multiples two numbers share.

Write ten multiples of each number. Circle the multiples both rows share.

Example	4	4	8	12	16	20	24	28	32	36	40	Least common multiple: <u>12</u>
	6	6	12	18	24	30	36	42	48	54	60	

1.	6	6									Least common multiple: _____
	8	8									

2.	3	3									Least common multiple: _____
	5	5									

Circle every multiple of the number.

Example	Multiples of 9:	18	27	39	45	56	72	85
----------------	-----------------	----	----	----	----	----	----	----

3.	Multiples of 7:	21	34	49	57	63	76	91
----	-----------------	----	----	----	----	----	----	----

4.	Multiples of 12:	24	32	48	66	84	90	96
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Factor or multiple? Fill in each blank.

Example	7 is a <u>factor</u> of 63.	5. 63 is a _____ of 7.
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6. The multiple of 8 that is between 50 and 60 is _____

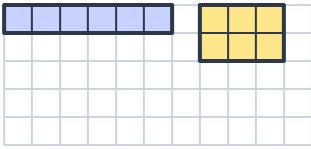
7. The factor of 45 that is between 10 and 20 is _____
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Factors and Multiples

A prime number has exactly two factors: 1 and itself.

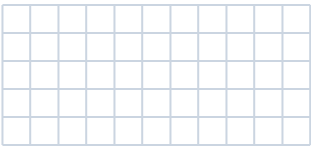
Draw every rectangle with that many squares. Prime or composite?

Example **6**



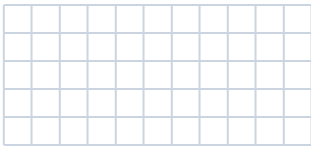
Prime **Composite**

1. 7



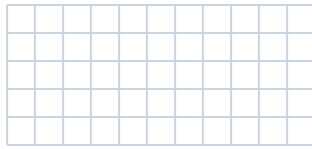
Prime Composite

2. 9



Prime Composite

3. 11



Prime Composite

Sort the numbers. Write each one in the right column.

0	1	2	15	19	21	29	37
49	51	57	59	71	87	93	97

Prime	Composite	Neither

Circle prime or composite. Write a factor pair that shows why.

Example **39** Prime **Composite**

Factor pair: 3 × 13

4. 47 Prime Composite

Factor pair: _____

5. 77 Prime Composite

Factor pair: _____

6. 121 Prime Composite

Factor pair: _____

7. How are prime and composite numbers alike? How are they different?

Factors and Multiples

Find common factors. Write a number as a product of primes.

List the factors. Find the common factors and the greatest one (GCF).

Example

12 and 18 GCF: 6

12: 1, 2, 3, 4, 6, 12

18: 1, 2, 3, 6, 9, 18

Common: 1, 2, 3, 6

1. 24 and 40

GCF: _____

24: _____

40: _____

Common: _____

2. 15, 25, and 35

GCF: _____

15: _____

25: _____

35: _____

Common: _____

3. 20, 30, and 50

GCF: _____

20: _____

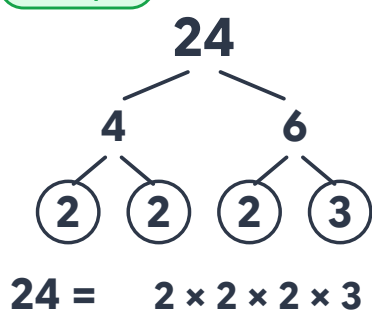
30: _____

50: _____

Common: _____

Make a factor tree. Then write the number as a product of primes.

Example



4.

60

60 = _____

5.

84

84 = _____

Solve. Show your work.

- 6.** A club makes gift bags from 18 pencils and 24 stickers. Every bag gets the same number of pencils and the same number of stickers, with none left over. What is the greatest number of bags it can make?

_____ bags

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2. 20 squares

Factors: _____



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3. 24 squares

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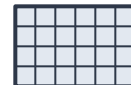
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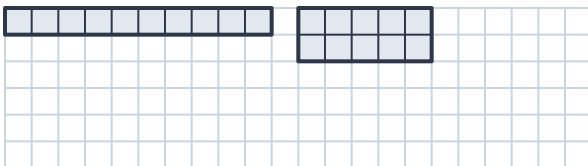


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Solve each puzzle.

Example Two factors of 48 add up to 14. <u>6</u> and <u>8</u>	7. Two factors of 60 add up to 17. _____ and _____	8. Two factors of 100 add up to 29. _____ and _____
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Factors and Multiples

Skip count to find multiples. Find the multiples two numbers share.

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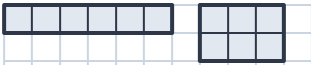
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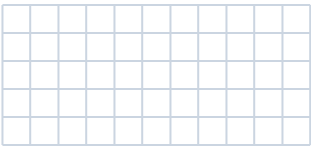
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Example **6**



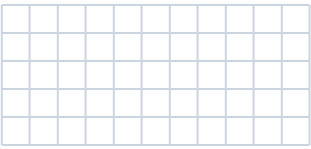
Prime **Composite**

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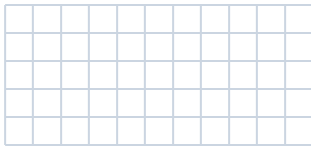
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18: 1, 2, 3, 6, 9, 18

Common: 1, 2, 3, 6

1. 24 and 40

GCF: _____

24: _____

40: _____

Common: _____

2. 15, 25, and 35

GCF: _____

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25: _____

35: _____

Common: _____

3. 20, 30, and 50

GCF: _____

20: _____

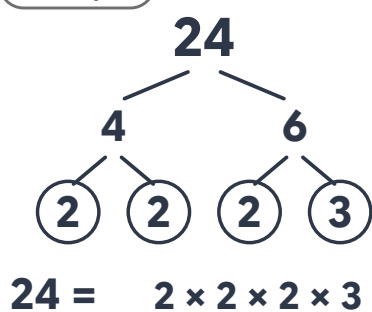
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1. 18 squares

Factors: 1, 2, 3, 6, 9, 18



$$\underline{1} \times \underline{18}$$



$$\underline{2} \times \underline{9}$$



$$\underline{3} \times \underline{6}$$

2. 20 squares

Factors: 1, 2, 4, 5, 10, 20



$$\underline{1} \times \underline{20}$$



$$\underline{2} \times \underline{10}$$



$$\underline{4} \times \underline{5}$$

3. 24 squares

Factors: 1, 2, 3, 4, 6, 8, 12, 24



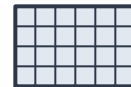
$$\underline{1} \times \underline{24}$$



$$\underline{2} \times \underline{12}$$



$$\underline{3} \times \underline{8}$$

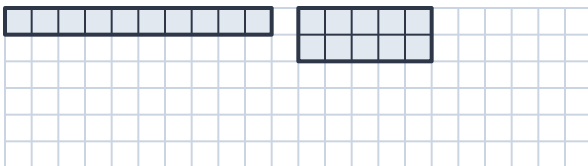


$$\underline{4} \times \underline{6}$$

Draw every rectangle you can make. Write each factor pair.

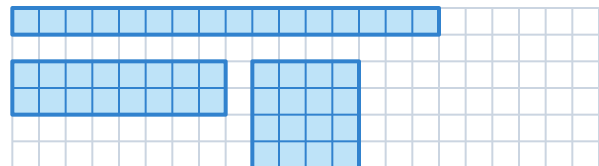
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5	6	8	8	4	21	4	36
				6	14	6	24
				7	12	8	18
						9	16
						12	12

Is it a factor? Circle Yes or No. Then show how you know.

Example	Is 6 a factor of 84?	Yes	No	How I know:	$6 \times 14 = 84$
4.	Is 7 a factor of 90?	Yes	No	How I know:	$90 \div 7 = 12 \text{ R } 6$
5.	Is 8 a factor of 96?	Yes	No	How I know:	$8 \times 12 = 96$
6.	Is 4 a factor of 98?	Yes	No	How I know:	$98 \div 4 = 24 \text{ R } 2$

Solve each puzzle.

Example Two factors of 48 add up to 14. <u>6</u> and <u>8</u>	7. Two factors of 60 add up to 17. <u>5</u> and <u>12</u>	8. Two factors of 100 add up to 29. <u>4</u> and <u>25</u>
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1.	6	6	12	18	24	30	36	42	48	54	60	Least common multiple: <u>24</u>
	8	8	16	24	32	40	48	56	64	72	80	
2.	3	3	6	9	12	15	18	21	24	27	30	Least common multiple: <u>15</u>
	5	5	10	15	20	25	30	35	40	45	50	

Circle every multiple of the number.

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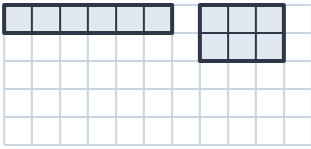
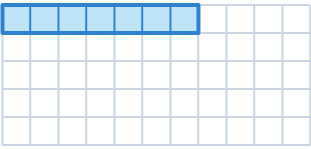
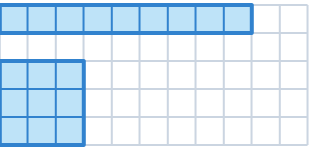
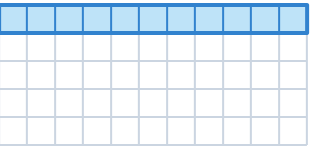
Factor or multiple? Fill in each blank.

Example 7 is a <u>factor</u> of 63.	5. 63 is a <u>multiple</u> of 7.
6. The multiple of 8 that is between 50 and 60 is <u>56</u>	
7. The factor of 45 that is between 10 and 20 is <u>15</u>	

Factors and Multiples

A prime number has exactly two factors: 1 and itself.

Draw every rectangle with that many squares. Prime or composite?

Example 6  Prime Composite	1. 7  Prime Composite	2. 9  Prime Composite	3. 11  Prime Composite
--	--	---	---

Sort the numbers. Write each one in the right column.

0	1	2	15	19	21	29	37
49	51	57	59	71	87	93	97

Prime				Composite				Neither	
2	19	29	37	15	21	49	51	0	1
59	71	97		57	87	93			

Circle prime or composite. Write a factor pair that shows why.

Example 39 Prime Composite Factor pair: <u>3 × 13</u>	4. 47 Prime Composite Factor pair: <u>only 1 × 47</u>
5. 77 Prime Composite Factor pair: <u>7 × 11</u>	6. 121 Prime Composite Factor pair: <u>11 × 11</u>

7. How are prime and composite numbers alike? How are they different?

Sample answer: Both are greater than 1 and have 1 and the number itself as factors. A prime has only those 2 factors; a composite has more.

Factors and Multiples

Find common factors. Write a number as a product of primes.

List the factors. Find the common factors and the greatest one (GCF).

Example 12 and 18 GCF: 6

12: 1, 2, 3, 4, 6, 12

18: 1, 2, 3, 6, 9, 18

Common: 1, 2, 3, 6

1. 24 and 40 GCF: 8

24: 1, 2, 3, 4, 6, 8, 12, 24

40: 1, 2, 4, 5, 8, 10, 20, 40

Common: 1, 2, 4, 8

2. 15, 25, and 35 GCF: 5

15: 1, 3, 5, 15

25: 1, 5, 25

35: 1, 5, 7, 35

Common: 1, 5

3. 20, 30, and 50 GCF: 10

20: 1, 2, 4, 5, 10, 20

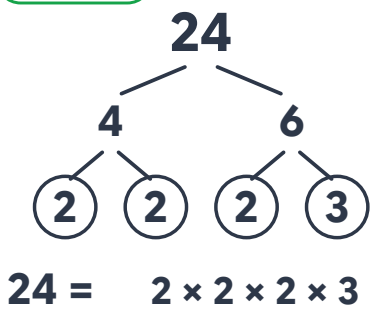
30: 1, 2, 3, 5, 6, 10, 15, 30

50: 1, 2, 5, 10, 25, 50

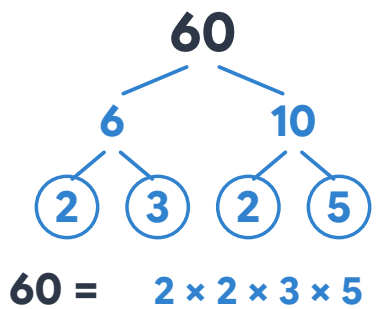
Common: 1, 2, 5, 10

Make a factor tree. Then write the number as a product of primes.

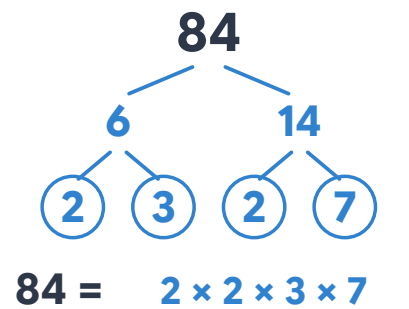
Example



4. Other trees work too



5. Other trees work too



Solve. Show your work.

6. A club makes gift bags from 18 pencils and 24 stickers. Every bag gets the same number of pencils and the same number of stickers, with none left over. What is the greatest number of bags it can make?

GCF of 18 and 24 is 6: each bag gets 3 pencils and 4 stickers. 6 bags