

Properties of Operations

Write a fact for each array and for the array turned around.

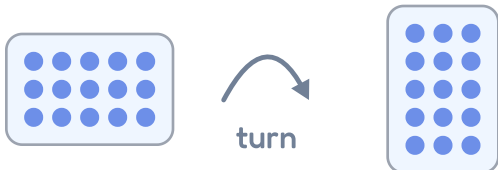
Order Property (commutative property)

Change the order of the numbers. The answer stays the same.

$$3 \times 5 = 5 \times 3$$

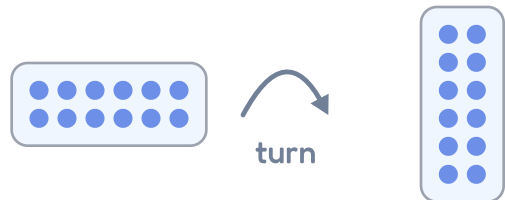
$$8 + 5 = 5 + 8$$

Example



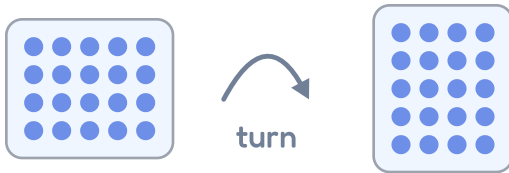
$$3 \times 5 = 15 \quad 5 \times 3 = 15$$

1.



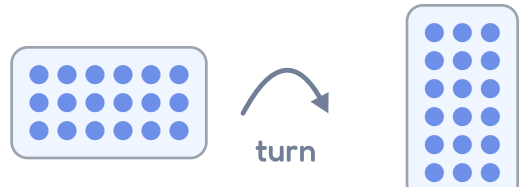
$$\underline{\quad} \times \underline{\quad} = \underline{\quad} \quad \underline{\quad} \times \underline{\quad} = \underline{\quad}$$

2.



$$\underline{\quad} \times \underline{\quad} = \underline{\quad} \quad \underline{\quad} \times \underline{\quad} = \underline{\quad}$$

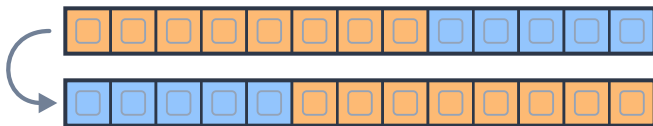
3.



$$\underline{\quad} \times \underline{\quad} = \underline{\quad} \quad \underline{\quad} \times \underline{\quad} = \underline{\quad}$$

Write an addition fact for each cube train and for it turned around.

4.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

5.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

Properties of Operations

Find both sides. The grouping changes, the answer does not.

Grouping Property (associative property)

Group the numbers a different way. The answer stays the same.

$$(2 + 3) + 4 = 2 + (3 + 4)$$

$$(2 \times 2) \times 3 = 2 \times (2 \times 3)$$

Example

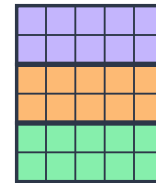
$$3 \times (2 \times 5)$$



3 groups of 10

$$3 \times 10 = 30$$

$$(3 \times 2) \times 5$$

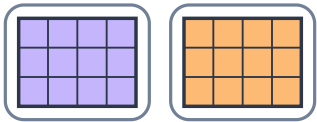


6 rows of 5

$$6 \times 5 = 30$$

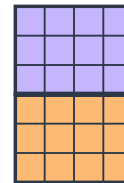
1.

$$2 \times (3 \times 4)$$



$$2 \times \underline{\quad} = \underline{\quad}$$

$$(2 \times 3) \times 4$$



$$\underline{\quad} \times 4 = \underline{\quad}$$

Find both sides. Circle the easier way.

$$2. \quad (7 + 3) + 6 = \underline{\quad} + 6 = \underline{\quad}$$

$$7 + (3 + 6) = 7 + \underline{\quad} = \underline{\quad}$$

$$3. \quad (5 + 8) + 2 = \underline{\quad} + 2 = \underline{\quad}$$

$$5 + (8 + 2) = 5 + \underline{\quad} = \underline{\quad}$$

$$4. \quad (2 \times 5) \times 7 = \underline{\quad} \times 7 = \underline{\quad}$$

$$2 \times (5 \times 7) = 2 \times \underline{\quad} = \underline{\quad}$$

$$5. \quad (4 \times 2) \times 5 = \underline{\quad} \times 5 = \underline{\quad}$$

$$4 \times (2 \times 5) = 4 \times \underline{\quad} = \underline{\quad}$$

Properties of Operations

Write a fact for each picture. Then finish each fact.

Identity Property (adding 0, multiplying by 1)

Add 0 or multiply by 1. The number stays the same.

$$8 + 0 = 8$$

$$8 \times 1 = 8$$

Example

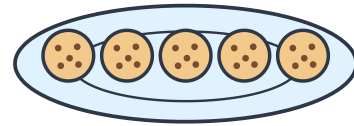
4 plates, 1 cookie on each



$$4 \times 1 = 4$$

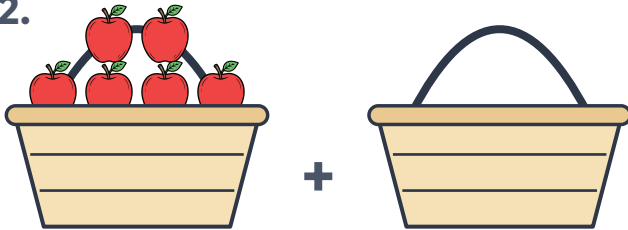
1.

1 plate with 5 cookies



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

2.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

3.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

Write the missing number.

4. $9 \times 1 = \underline{\quad}$

5. $0 + 47 = \underline{\quad}$

6. $\underline{\quad} \times 1 = 8$

7. $63 + \underline{\quad} = 63$

8. $1 \times \underline{\quad} = 7$

9. $\underline{\quad} + 0 = 25$

10. $1 \times 10 = \underline{\quad}$

11. $0 + \underline{\quad} = 90$

12. $6 \times \underline{\quad} = 6$

13. $38 + 0 = \underline{\quad}$

14. $\underline{\quad} \times 5 = 5$

15. $52 = 52 + \underline{\quad}$

Properties of Operations

Write O, G, or I for each one. Then write the missing numbers.

**Order**

$$2 \times 3 = 3 \times 2$$

**Grouping**

$$(1 + 2) + 3 = 1 + (2 + 3)$$

**Identity**

$$5 + 0 = 5$$

Write O, G, or I in the box.

1. $4 \times 9 = 9 \times 4$

2. $(2 \times 5) \times 4 = 2 \times (5 \times 4)$

3. $9 \times 1 = 9$

4. $7 + 15 = 15 + 7$

5. $0 + 36 = 36$

6. $(6 + 4) + 7 = 6 + (4 + 7)$

7. $8 \times 6 = 6 \times 8$

8. $14 = 14 + 0$

9. $3 \times (2 \times 5) = (3 \times 2) \times 5$

10. $1 \times 7 = 7$

11. $(8 + 2) + 5 = 8 + (2 + 5)$

12. $23 + 9 = 9 + 23$

Write the missing number. Use the properties.

13. $6 \times 7 = 7 \times \underline{\quad}$

14. $(4 + 5) + 5 = 4 + (\underline{\quad} + 5)$

15. $9 \times \underline{\quad} = 9$

16. $13 + 8 = \underline{\quad} + 13$

17. $\underline{\quad} + 0 = 54$

18. $2 \times (4 \times 5) = (2 \times \underline{\quad}) \times 5$

Properties of Operations

Use the properties to solve each problem.

Solve each problem.

1. Ben has 4 boxes of 6 crayons. Ana has 6 boxes of 4 crayons. Who has more crayons?

Ben: _____ $\times$ _____ = _____

Circle one:

Ana: _____ $\times$ _____ = _____

Ben Ana the same

2. Lily has 3 bags. Each bag has 2 rows of 5 marbles. How many marbles does she have?

_____ marbles

3. There are 8 tables. Each table has 1 vase on it. How many vases are there?

_____ vases

Find the two numbers that make 10 first. Then solve.

4. $5 \times 7 \times 2 =$ _____

5. $8 + 6 + 2 =$ _____

6. $2 \times 9 \times 5 =$ _____

7. $4 + 7 + 6 =$ _____

8. $5 \times 3 \times 2 =$ _____

9. $3 + 9 + 7 =$ _____

Is each one true? Circle True or False.

10. $6 \times 4 = 4 \times 6$

True False

11. $7 \times 0 = 7$

True False

12. $9 \times 1 = 1$

True False

13. $(3 + 4) + 5 = 3 + (4 + 5)$

True False

Properties of Operations

Write a fact for each array and for the array turned around.

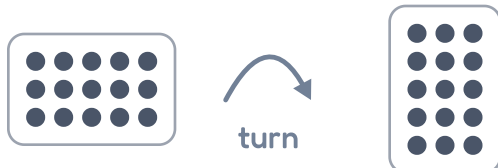
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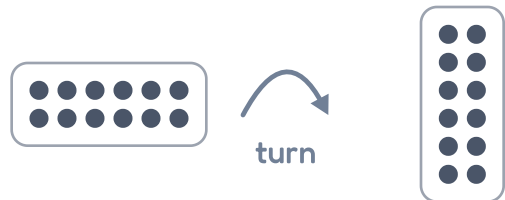
$$8 + 5 = 5 + 8$$

Example



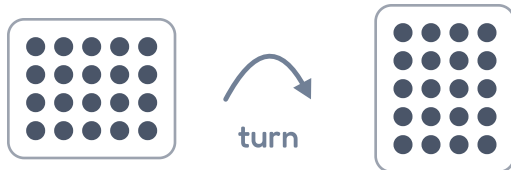
$$3 \times 5 = 15 \quad 5 \times 3 = 15$$

1.



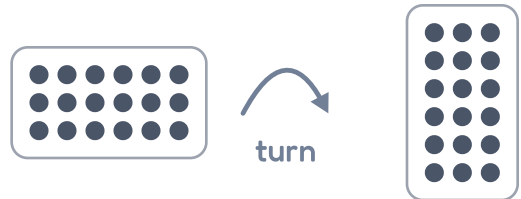
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2.



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Example

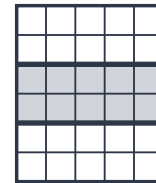
$$3 \times (2 \times 5)$$



3 groups of 10

$$3 \times 10 = 30$$

$$(3 \times 2) \times 5$$

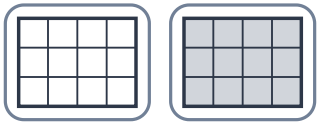


6 rows of 5

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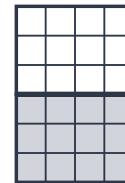
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Properties of Operations

Write a fact for each picture. Then finish each fact.

Identity Property (adding 0, multiplying by 1)

Add 0 or multiply by 1. The number stays the same.

$$8 + 0 = 8$$

$$8 \times 1 = 8$$

Example

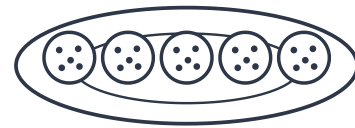
4 plates, 1 cookie on each



$$4 \times 1 = 4$$

1.

1 plate with 5 cookies



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

2.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

3.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

Write the missing number.

4. $9 \times 1 = \underline{\quad}$

5. $0 + 47 = \underline{\quad}$

6. $\underline{\quad} \times 1 = 8$

7. $63 + \underline{\quad} = 63$

8. $1 \times \underline{\quad} = 7$

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Properties of Operations

Write O, G, or I for each one. Then write the missing numbers.

**Order**

$$2 \times 3 = 3 \times 2$$

**Grouping**

$$(1 + 2) + 3 = 1 + (2 + 3)$$

**Identity**

$$5 + 0 = 5$$

Write O, G, or I in the box.

1. $4 \times 9 = 9 \times 4$

☐

2. $(2 \times 5) \times 4 = 2 \times (5 \times 4)$

☐

3. $9 \times 1 = 9$

☐

4. $7 + 15 = 15 + 7$

☐

5. $0 + 36 = 36$

☐

6. $(6 + 4) + 7 = 6 + (4 + 7)$

☐

7. $8 \times 6 = 6 \times 8$

☐

8. $14 = 14 + 0$

☐

9. $3 \times (2 \times 5) = (3 \times 2) \times 5$

☐

10. $1 \times 7 = 7$

☐

11. $(8 + 2) + 5 = 8 + (2 + 5)$

☐

12. $23 + 9 = 9 + 23$

☐

Write the missing number. Use the properties.

13. $6 \times 7 = 7 \times \underline{\quad}$

14. $(4 + 5) + 5 = 4 + (\underline{\quad} + 5)$

15. $9 \times \underline{\quad} = 9$

16. $13 + 8 = \underline{\quad} + 13$

17. $\underline{\quad} + 0 = 54$

18. $2 \times (4 \times 5) = (2 \times \underline{\quad}) \times 5$

Properties of Operations

Use the properties to solve each problem.

Solve each problem.

1. Ben has 4 boxes of 6 crayons. Ana has 6 boxes of 4 crayons. Who has more crayons?

Ben: _____ $\times$ _____ = _____

Circle one:

Ana: _____ $\times$ _____ = _____

Ben Ana the same

2. Lily has 3 bags. Each bag has 2 rows of 5 marbles. How many marbles does she have?

_____ marbles

3. There are 8 tables. Each table has 1 vase on it. How many vases are there?

_____ vases

Find the two numbers that make 10 first. Then solve.

4. $5 \times 7 \times 2 =$ _____

5. $8 + 6 + 2 =$ _____

6. $2 \times 9 \times 5 =$ _____

7. $4 + 7 + 6 =$ _____

8. $5 \times 3 \times 2 =$ _____

9. $3 + 9 + 7 =$ _____

Is each one true? Circle True or False.

10. $6 \times 4 = 4 \times 6$

True False

11. $7 \times 0 = 7$

True False

12. $9 \times 1 = 1$

True False

13. $(3 + 4) + 5 = 3 + (4 + 5)$

True False

Properties of Operations

Write a fact for each array and for the array turned around.

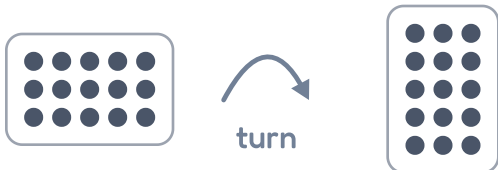
Order Property (commutative property)

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$$8 + 5 = 5 + 8$$

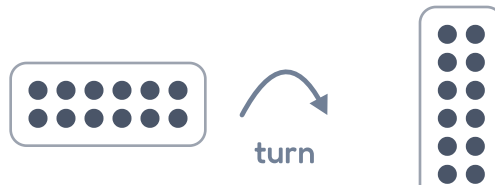
Example



$$3 \times 5 = 15$$

$$5 \times 3 = 15$$

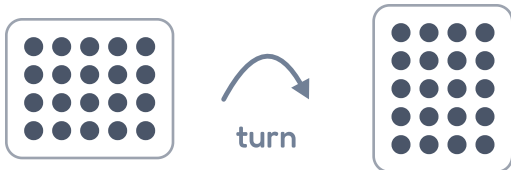
1.



$$2 \times 6 = 12$$

$$6 \times 2 = 12$$

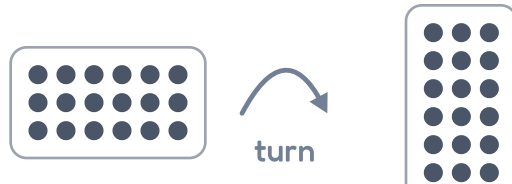
2.



$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

3.



$$3 \times 6 = 18$$

$$6 \times 3 = 18$$

Write an addition fact for each cube train and for it turned around.

4.



$$8 + 5 = 13$$

$$5 + 8 = 13$$

5.



$$6 + 9 = 15$$

$$9 + 6 = 15$$

Properties of Operations

Find both sides. The grouping changes, the answer does not.

Grouping Property (associative property)

Group the numbers a different way. The answer stays the same.

$$(2 + 3) + 4 = 2 + (3 + 4)$$

$$(2 \times 2) \times 3 = 2 \times (2 \times 3)$$

Example

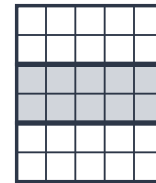
$$3 \times (2 \times 5)$$



3 groups of 10

$$3 \times 10 = 30$$

$$(3 \times 2) \times 5$$

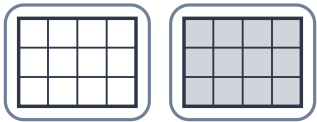


6 rows of 5

$$6 \times 5 = 30$$

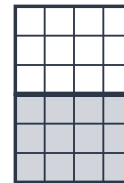
1.

$$2 \times (3 \times 4)$$



$$2 \times 12 = 24$$

$$(2 \times 3) \times 4$$



$$6 \times 4 = 24$$

Find both sides. Circle the easier way.

$$2. \quad (7 + 3) + 6 = 10 + 6 = 16$$

$$7 + (3 + 6) = 7 + 9 = 16$$

$$3. \quad (5 + 8) + 2 = 13 + 2 = 15$$

$$5 + (8 + 2) = 5 + 10 = 15$$

$$4. \quad (2 \times 5) \times 7 = 10 \times 7 = 70$$

$$2 \times (5 \times 7) = 2 \times 35 = 70$$

$$5. \quad (4 \times 2) \times 5 = 8 \times 5 = 40$$

$$4 \times (2 \times 5) = 4 \times 10 = 40$$

Properties of Operations

Write a fact for each picture. Then finish each fact.

Identity Property (adding 0, multiplying by 1)

Add 0 or multiply by 1. The number stays the same.

$$8 + 0 = 8$$

$$8 \times 1 = 8$$

Example

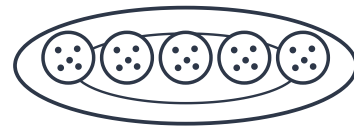
4 plates, 1 cookie on each



$$4 \times 1 = 4$$

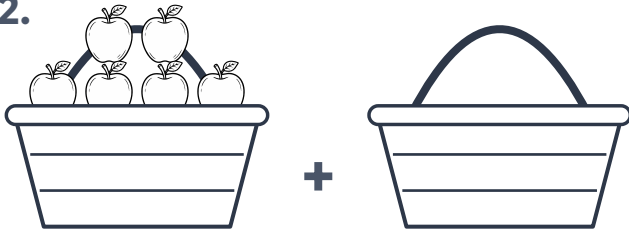
1.

1 plate with 5 cookies



$$1 \times 5 = 5$$

2.



$$6 + 0 = 6$$

3.



$$0 + 4 = 4$$

Write the missing number.

4. $9 \times 1 = \underline{9}$

5. $0 + 47 = \underline{47}$

6. $\underline{8} \times 1 = 8$

7. $63 + \underline{0} = 63$

8. $1 \times \underline{7} = 7$

9. $\underline{25} + 0 = 25$

10. $1 \times 10 = \underline{10}$

11. $0 + \underline{90} = 90$

12. $6 \times \underline{1} = 6$

13. $38 + 0 = \underline{38}$

14. $\underline{1} \times 5 = 5$

15. $52 = 52 + \underline{0}$

Properties of Operations

Write O, G, or I for each one. Then write the missing numbers.

O Order

$$2 \times 3 = 3 \times 2$$

G Grouping

$$(1 + 2) + 3 = 1 + (2 + 3)$$

I Identity

$$5 + 0 = 5$$

Write O, G, or I in the box.

1. $4 \times 9 = 9 \times 4$

O

2. $(2 \times 5) \times 4 = 2 \times (5 \times 4)$

G

3. $9 \times 1 = 9$

I

4. $7 + 15 = 15 + 7$

O

5. $0 + 36 = 36$

I

6. $(6 + 4) + 7 = 6 + (4 + 7)$

G

7. $8 \times 6 = 6 \times 8$

O

8. $14 = 14 + 0$

I

9. $3 \times (2 \times 5) = (3 \times 2) \times 5$

G

10. $1 \times 7 = 7$

I

11. $(8 + 2) + 5 = 8 + (2 + 5)$

G

12. $23 + 9 = 9 + 23$

O

Write the missing number. Use the properties.

13. $6 \times 7 = 7 \times \underline{6}$

14. $(4 + 5) + 5 = 4 + (\underline{5} + 5)$

15. $9 \times \underline{1} = 9$

16. $13 + 8 = \underline{8} + 13$

17. $\underline{54} + 0 = 54$

18. $2 \times (4 \times 5) = (2 \times \underline{4}) \times 5$

Properties of Operations

Use the properties to solve each problem.

Solve each problem.

1. Ben has 4 boxes of 6 crayons. Ana has 6 boxes of 4 crayons. Who has more crayons?

Ben: $4 \times 6 = 24$

Ana: $6 \times 4 = 24$

Circle one:

Ben Ana the same

2. Lily has 3 bags. Each bag has 2 rows of 5 marbles. How many marbles does she have?

$3 \times (2 \times 5) = 3 \times 10 = 30$
30 marbles

3. There are 8 tables. Each table has 1 vase on it. How many vases are there?

$8 \times 1 = 8$
8 vases

Find the two numbers that make 10 first. Then solve.

4. $(5) \times 7 \times (2) = 70$

5. $(8) + 6 + (2) = 16$

6. $(2) \times 9 \times (5) = 90$

7. $(4) + 7 + (6) = 17$

8. $(5) \times 3 \times (2) = 30$

9. $(3) + 9 + (7) = 19$

Is each one true? Circle True or False.

10. $6 \times 4 = 4 \times 6$

True

False

11. $7 \times 0 = 7$

True

False

12. $9 \times 1 = 1$

True

False

13. $(3 + 4) + 5 = 3 + (4 + 5)$

True

False