



Helping With Math

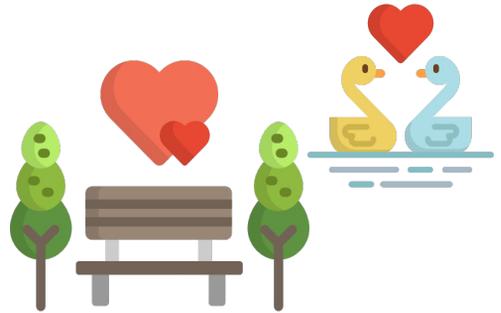
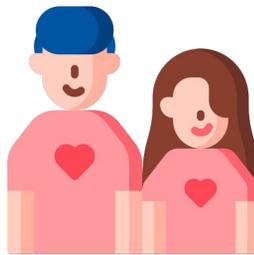
USA
GRADES

Multiplication Property

Suitable for students
aged 10-12



This pack is suitable for learners aged 10 to 12 years old or 6th to 7th grades (USA). The content covers fact files and relevant basic and advanced activities involving multiplication property.



Valentine's Day is celebrated in honor of the Christian martyr, Saint Valentine. This is an annual celebration of romantic love, admiration and friendship.



- Multiplication is the process of finding the product of two or more numbers called the factors (*multiplicand and multiplier*).
- It has different properties namely, commutative, associative, identity, inverse, and distributive properties.
- These properties of multiplication show us the different ways of finding the product.



MULTIPLICATION PROPERTIES

COMMUTATIVE PROPERTY

The commutative property of multiplication shows us that changing the order of the factors does not change the product.

Examples:

$$a \times b = b \times a$$

$$c \times d = d \times c$$



ASSOCIATIVE PROPERTY

The associative property of multiplication tells us that when multiplying three or more factors, the grouping of these factors does not affect the product.

Examples:

$$(a \times b) \times c = a \times (b \times c)$$

$$j \times (k \times l) = (j \times k) \times l$$



Remember that parentheses tell us what we need to do first. In this case, we need to multiply first the factors inside the parenthesis.

For example:

$$(2 \times 2) \times 1 = 2 \times (2 \times 1)$$

$$4 \times 1 = 2 \times 2$$

$$4 = 4$$



In this example, we added the factors inside the parentheses, then multiplied its product to the remaining multiplier. Regardless of the groupings made, we were still able to get the same product.



MULTIPLICATION PROPERTIES

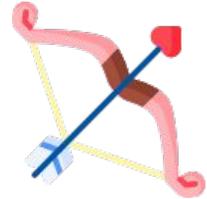
IDENTITY PROPERTY

The identity property of multiplication says that when a number is multiplied by 1 the product will still be the same number. 1 is called the **identity element** in multiplication.

Examples:

$$a \times 1 = a$$

$$1 \times a = a$$



Because of the commutative property, we can interchange the position of the factors.

INVERSE PROPERTY

The inverse property of multiplication teaches us that when you multiply any number to its *reciprocal or multiplicative inverse*, the product will always be 1.

Example:

$$a \times \frac{1}{a} = 1$$

DISTRIBUTIVE PROPERTY

The distributive property of multiplication shows us that the product of a number multiplied to the sum of two addends is the same when that number is multiplied to each of the addends.

Example:

$$a(b + c) = ab + ac$$



MULTIPLICATION PROPERTIES

Here is another example of Distributive Property.

$$2 \times (1 + 3) = 2 \times 4 = 8$$

Using the distributive property,

$$2 \times (1 + 3) = (2 \times 1) + (2 \times 3) = 2 + 6 = 8$$



As you can see in the second equation, we distributed the multiplicand 2 to the addends 1 and 3 and got the same result.

In multiplication, when you multiply both sides of an equation with the same number, the two sides will remain equal.

This is called the **Multiplication Property of Equality**. You can multiply the equation with any number, except with 0.

If a, b and c are real numbers such that **a = b** then,

$$a \times c = b \times c$$

We can use this to solve for equations. For example, find the value of a in this equation:

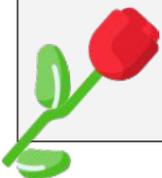
$$a/4 = 2$$

Let's multiply both sides with 4 which is the reciprocal of $1/4$ and we'll get $a/4 \times 4 = 2 \times 4$. When simplified, we'll get **a = 8**.

To check if this is correct, substitute the obtained value to the original equation.

$$8/4 = 2$$

$$2 = 2$$



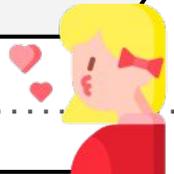
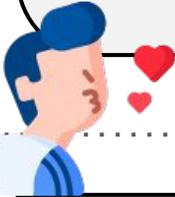
PRACTICE TIME!

Find the value of a using the Multiplication Property of Equality.

$$\frac{a}{2} = 5$$

Provide an example for
Inverse Property of
Multiplication.

Provide an example for
Identity Property of
Multiplication.



1. Which is an example of commutative property?

a. $3 \times 3 = 2 \times 3$

b. $3 \times 2 = 2 \times 3$

2. Which is an example of associative property?

a. $(2 \times 1) \times 2 = 2 \times (1 \times 2)$

b. $(2 \times 1) + 2 = (2 \times 2) + (2 \times 1)$

3. Which is an example of distributive property?

a. $(2 \times 1) + 1 = 1 + (2 \times 1)$

b. $3 \times (2 + 1) = (3 \times 2) + (3 \times 1)$



TABLE OF ACTIVITIES

Ages 10-11 (Basic)		6th Grade
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2	Dial My Number	
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A DATE WITH YOU

G6
Basic

In Japan, Valentine's Day is celebrated by women giving gifts and chocolates to men which is often related to "kokuhaku" or confession. Jeff is torn between these two ladies who confessed their feelings. If the equation beneath them is true, shade one heart beside them. If it is false, write the correct answer. The lady who gets more shaded hearts will go on a date with Jeff.



Kyla



Jane

$$1.) 2 \times (2 + 1) \\ = (2 \times 2) + (2 \times 1)$$

$$1.) 7 \times 1 = 0$$

$$2.) 11 \times 3 = 11 + 3$$

$$2.) 12 \times 4 = 4 \times 12$$

$$3.) 12 \times (2 \times 3) \\ = 12 \times (2 + 3)$$

$$3.) 5 \times (4 \times 3) \\ = (5 \times 4) \times 3$$

$$4.) 20 \times 1 = 20$$

$$4.) 3 \times 15 = 15 \times 3$$



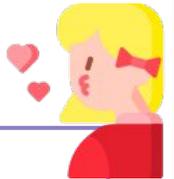
DIAL MY NUMBER

G6
Basic

Before cell phones occurred, couples communicate through the telephones. John lost the phone number of his girlfriend and only memorized some parts of it. Complete the equations below. The numbers to complete the equations will also complete the telephone number below.



$$1.) 2 \times (4 \times \underline{\quad}) = 40$$



$$4.) 4 \times (3 + \underline{\quad}) = 40$$

$$2.) \underline{\quad} \times 1 = 6$$

$$5.) 3 \times 1 \times 2 = \underline{\quad}$$

$$3.) 3 \times \underline{\quad} \times 2 = 24$$

$$6.) (3 \times \underline{\quad}) \times 2 = 12$$



+1

9

3

1

5



LOVE LETTERS

G6
Basic

Long distance relationships are hard. Good thing Esther Howland started manufacturing Valentine's Day cards! These ladies can now receive letters from their special someone. Answer the equations below using the distributive property to successfully send the cards to these ladies.

1.) $2 \times (4 + 5) = \underline{\quad}$



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



3.) $2 \times (4 + 12) = \underline{\quad}$



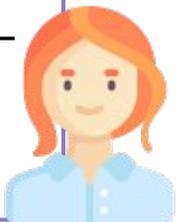
4.) $4 \times (2 + 6) = \underline{\quad}$



BE A MATCHMAKER

G6
Basic

Matchmaking is very popular during the Love Month, February. Find their love matches by answering the equations below. The answers are equivalent to the ages of their possible matches. Write your answers to the equation and the name of their matches on the spaces provided.

 1.) $3 \times (12 + 6) =$ _____ _____	 2.) $3 \times (2 \times 4) =$ _____ _____
 3.) $2 \times 3 \times 5 =$ _____ _____	 4.) $(2 \times 8) + (7 \times 7) =$ _____ _____

 Bryan 24	 Sonia 65	 Eleanor 54	 Renz 30
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SURPRISE!

G6
Basic

A surprise is waiting for Monica on the top floor! Climb the stairs with her as you carefully provide the possible equations using the given on each step. Use the assigned properties of multiplication.



4. Factor: 30 | Inverse Property

3. Factors: 12, 10 | Commutative Property

2. Factor: 3, Addends: 10, 12 | Distributive Property

1. Factors: 4, 3, 5 | Associative Property



SUGAR RUSH

G7
Advanced

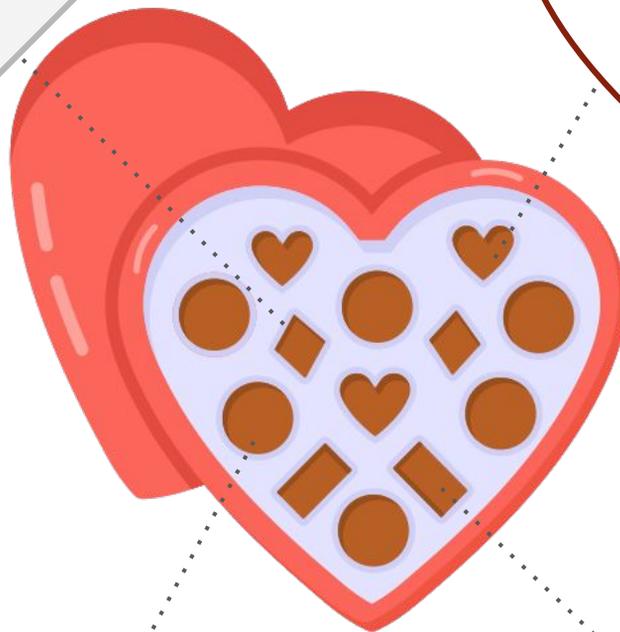
Richard Cadbury, the son of the Cadbury manufacturer, started the idea of chocolates in a box which is now tied to Valentine's Day. The chocolates in this box has equations that you need to answer. Find the value of x in each equations using the Multiplication Property of Equality.

$$1.) \frac{x}{5} = 6$$

x : _____

$$2.) \frac{x}{4} = 15$$

x : _____



$$3.) \frac{x}{7} = 23$$

x : _____

$$4.) \frac{x}{6} = 29$$

x : _____



CUPID'S ARROW

G7
Advanced

Cupid is the Roman god of desire and affection. He makes two people fall in love with his arrows. Find the value of 'a' in the equations below. Struck Cupid's arrow in each of the hearts as you finish answering an item.



$$1.) 4 \times (5 + a) = 52$$



$$4.) 2 \times (8 + a) = 34$$



$$2.) 2 \times (a + 7) = 26$$



$$5.) 3 \times (9 + a) = 48$$



$$3.) 5 \times (a + 7) = 70$$



$$6.) 4 \times (a + 6) = 44$$



BUSY DAY FOR FLORISTS

G7
Advanced

For Valentine's Day, an approximate of 244 million roses are being planted. This means that florists get very busy during this season. Help out the florist below with the orders by writing down the appropriate equation for each orders. Identify which property of multiplication is used.



ORDER 1

2 bouquets with 10 stalks of flowers each
Each bouquets should consist of 4 red roses and 6 white roses.



ORDER 2

5 boxes of pots
In each boxes, there are 3 rows and 4 columns

ORDER 3

3 flower pots with 3 planted flowers each and with 3 petals per flower



Please help me out with the orders!



WILL YOU BE MY VALENTINE?

G7
Advanced

Proposals are commonly done during Valentine's Day. As you open the gift sent to you, a very important question popped out. Before you can answer this, provide the equations based on the descriptions below and provide the answer using the Multiplication Property of Equality.

One-fourth of the couples who visited the park, set up their mats for a picnic. If 30 couples were having a picnic, how many couples visited the park?

Equation:

Answer:



One-third of the stocks of chocolate in the store were bought. If 45 chocolates were bought, how many chocolates were there in total?

Equation:

Answer:

One-fifth of the prepared bouquet of flowers were sold. If 57 bouquets were bought how many bouquets were there in total?

Equation:

Property:



Will you be my Valentine?



MASS WEDDINGS

G7
Advanced

We celebrate love during Valentine's Day. This is also the most common day to get married. Read the paragraph below to learn one way of how the Philippines celebrate this day. Answer the question below by providing the equation and property of multiplication used. Draw the model of how the mass wedding would look like based on the given.

Every February 14 in the Philippines, mass weddings are being conducted in the country. These are occasions when couples say "I do" all at the same time and at the same location. If the wedding location is divided into 2 blocks, and each blocks have 5 columns and 6 rows, how many people are present in the mass wedding?

Equation:

Property:

Model:



ANSWER GUIDE

Activity 1

Kyla: 1. True 2. $11 \times 3 = 3 \times 11$
3. $12 \times (2 \times 3) = (12 \times 2) \times 3$ 4. True
Jane: 1. $7 \times 1 = 7$ 2. True 3. True 4. True
**Jane gets the most number of shaded hearts.*

Activity 2

1.) 5 2.) 6 3.) 4 4.) 7 5.) 6 6.) 2
Phone number: +15693471562

Activity 3

1. 18 2. 30 3. 32 4. 32

Activity 4

1. 54 - Eleanor 2. 24 - Bryan 3. 30 - Renz 4. 65 - Sonia

Activity 5

1. $(4 \times 3) \times 5$ | $4 \times (3 \times 5)$
2. $3 \times (10 + 12)$ | $(3 \times 10) + (3 \times 12)$
3. 12×10 | 10×12
4. $30 \times \frac{1}{30} = 1$



ANSWER GUIDE

Activity 6

1. 30 2. 60 3. 161 4. 174

Activity 7

1.) 7 2.) 6 3.) 7 4.) 9 5.) 7 6.) 5

Activity 8

1. $2 \times (4 + 6)$ | Distributive 2. $5 \times 3 \times 4$ | Commutative
3. $3 \times (3 \times 3)$ | Associative

Activity 9

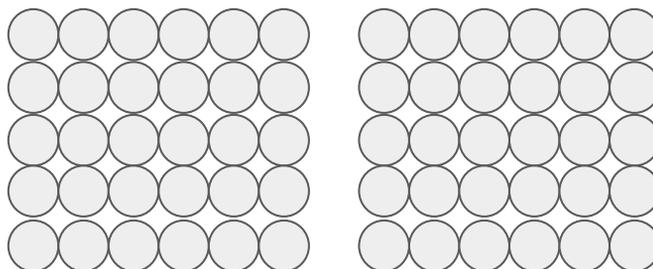
1. $a/4 = 30$; $a = 120$ couples 2. $a/3 = 45$; $a = 135$ chocolates
3. $a/5 = 57$; 285 bouquets

Activity 10

Equation: $2 \times 5 \times 6 = 60$ people

Property: Commutative

Model:



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