



# Multiply by 0

Discover the commutative property and find out why it's such a handy thing to know

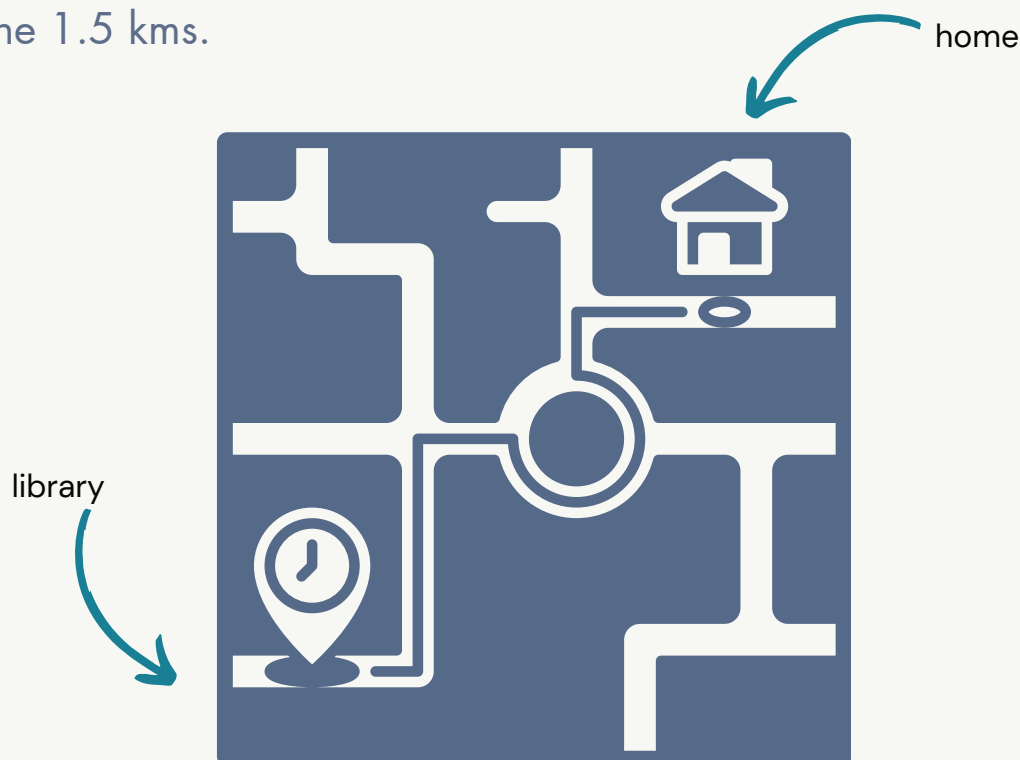


## Learning Intentions

- learn about the commutative property of multiplication
- practice using the commutative property when multiplying
- learn and apply the zero identity to multiplication

## Commutative property

Carl works at the local library. Every day he leaves his house and walks to work. It takes him 18 minutes and he walks 1.5 kms each morning. At the end of the day, Carl walks home. It still takes him 18 minutes to cover the 1.5 kms.



So, Carl walks the same distance whether he is walking to work in the morning, or walking home from work in the evening.



This is how the Commutative Property works.

We can multiply the numbers as we see them, or we can rearrange them. We will still get the same answer.

4 x 2 is the same as 2 x 4

We can rearrange tricky multiplication questions to make them easier.  
7 x 5 looks tricky, but 5 x 7 looks easier !

# COMMUTATIVE PROPERTY

(COM-MU-TA-TIVE)

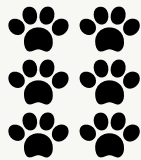
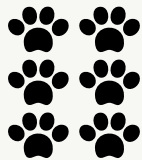
The **commutative property** tells us that when we **multiply**, we can rearrange the numbers on the left of the equal sign and we'll still get the same answer.



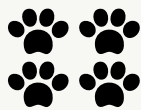
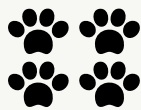
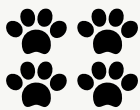
$$2 \times 5 = 10$$



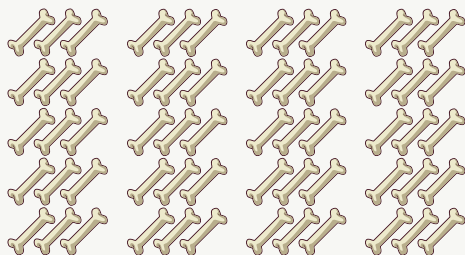
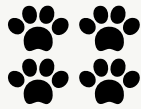
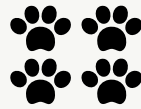
$$5 \times 2 = 10$$



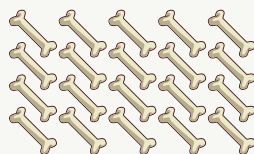
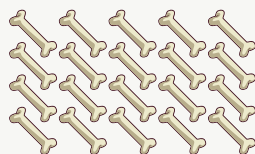
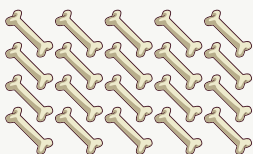
$$4 \times 6 = 24$$



$$6 \times 4 = 24$$



$$3 \times 5 \times 4 = 60$$

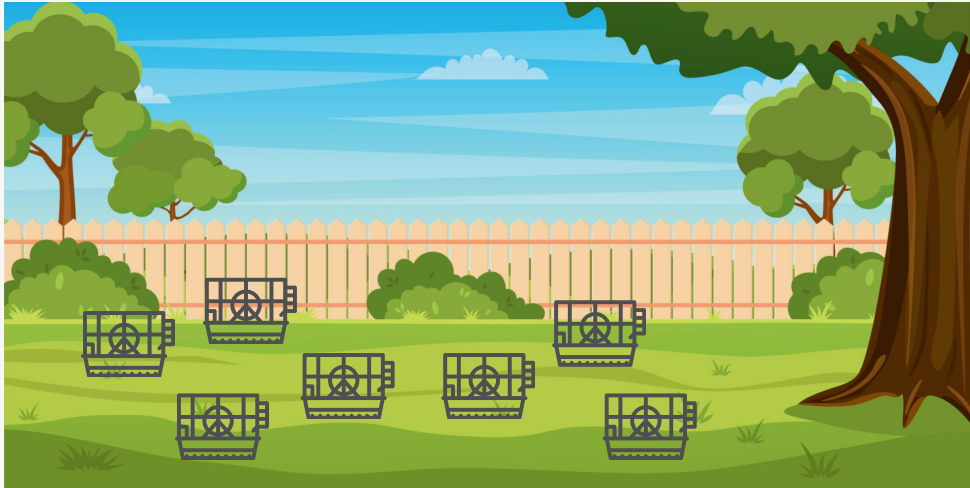


$$5 \times 4 \times 3 = 60$$

# ZERO PRINCIPLE

The **zero principle** applies to multiplication. It tells us that any number multiplied by 0 equals 0.

Multiplication is the same as skip counting really fast. But it doesn't matter how many times we skip count or multiply 0, we still get 0.



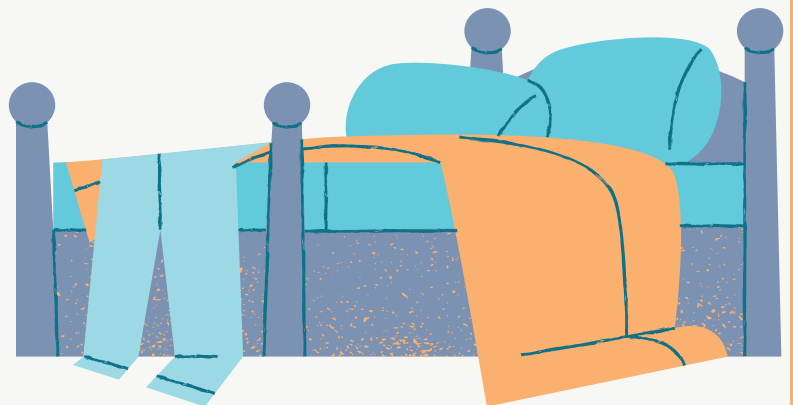
There are 7 cages in the backyard, and each cage has 0 guinea pigs in it. How many guinea pigs are in the backyard?

$$0 \text{ guinea pigs} \times 7 \text{ cages} = 0 \text{ guinea pigs}$$

On Monday, Mum said she will give you \$2 for each day you make your bed.

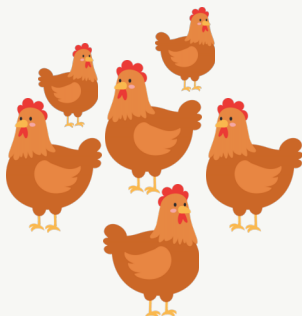
It's Thursday and you still haven't made your bed.

How much pocket money have you earned?



Monday to Thursday is 4 days.

$$4 \times 0 = 0$$



We have six chickens. None of them has laid any eggs.

How many eggs can we collect from the chicken coop?

$$6 \times 0 = 0$$



## In Real Life

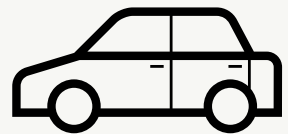
Who knew multiplication could be such a useful tool in everyday life?

If 2 people are sharing a pizza, and you each eat 0 slices, how many slices are gone from the pizza?



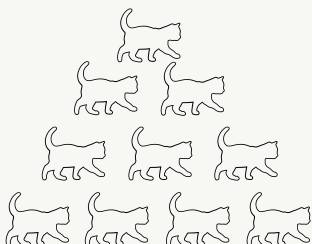
A construction worker earns \$5 per hour.  
If they work for 0 hours, how much will they earn?

A car is not moving; its speed is 0 kms per hour.  
How far will it travel in 3 hours?



A recipe calls for 0 cups of sugar. If you want to make  
12 times the original recipe, how much sugar do you need?

If you put \$0 into your bank account everyday for 8  
days, how much money have you saved?



A shelter has 10 cats available for adoption.  
If 0 cats are adopted each day, how many cats  
have been adopted after 4 days?

# The Zero Principle

## Commutative Property

Multiplying by 0 is a great way to practice the Commutative Property of multiplication.

**Learning goal:**

- Practice multiplying by zero
- Use the commutative property of multiplication

$0 \times 6 =$

$6 \times 0 =$

$25 \times 0$

$0 \times 4 =$

$4 \times 0 =$

$0 \times 36 =$

$0 \times 5 =$

$5 \times 0 =$

$49 \times 0 =$

$0 \times 2 =$

$2 \times 0 =$

$3 \times 5 \times 6 \times 0 =$

$0 \times 1 =$

$1 \times 0 =$

$0 \times 25 =$

$0 \times 8 =$

$8 \times 0 =$

$36 \times 0 =$

$0 \times 10 =$

$10 \times 0 =$

$0 \times 49 =$

$0 \times 3 =$

$3 \times 0 =$

$6 \times 0 \times 3 \times 5 =$

$0 \times 9 =$

$9 \times 0 =$

$18 \times 0 =$

$0 \times 7 =$

$7 \times 0 =$

$0 \times 18 =$

$0 \times 0 =$

$0 \times 0 =$

$0 \times 568 =$



# The Zero Principle

## Commutative Property

IRL:

- 0 pizza slices
- \$0
- 0 kms
- 0 cups of sugar
- \$0
- 0 cats are adopted

$$0 \times 6 = 0$$

$$0 \times 4 = 0$$

$$0 \times 5 = 0$$

$$0 \times 2 = 0$$

$$0 \times 1 = 0$$

$$0 \times 8 = 0$$

$$0 \times 10 = 0$$

$$0 \times 3 = 0$$

$$0 \times 9 = 0$$

$$0 \times 7 = 0$$

$$0 \times 0 = 0$$

$$6 \times 0 = 0$$

$$4 \times 0 = 0$$

$$5 \times 0 = 0$$

$$2 \times 0 = 0$$

$$1 \times 0 = 0$$

$$8 \times 0 = 0$$

$$10 \times 0 = 0$$

$$3 \times 0 = 0$$

$$9 \times 0 = 0$$

$$7 \times 0 = 0$$

$$0 \times 0 = 0$$

$$25 \times 0 = 0$$

$$0 \times 36 = 0$$

$$49 \times 0 = 0$$

$$3 \times 5 \times 6 \times 0 = 0$$

$$0 \times 25 = 0$$

$$36 \times 0 = 0$$

$$0 \times 49 = 0$$

$$6 \times 0 \times 3 \times 5 = 0$$

$$18 \times 0 = 0$$

$$0 \times 18 = 0$$

$$0 \times 568 = 0$$