

Maths Mastery

Order of Operations



Put in the Brackets

Put brackets into these number sentences so they are true:

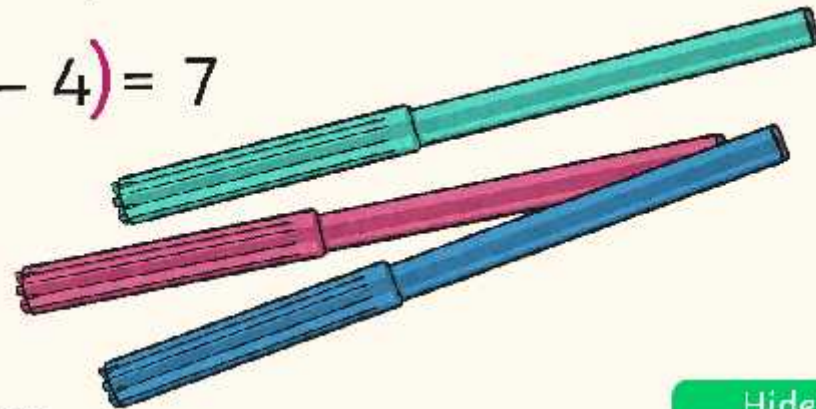
1. $(15 + 7) \times 4 = 88$

2. $18 - (9 - 2) = 11$

3. $8 \times 4 - 2 \times 5 = 22$ no brackets

4. $16 \div (8 - 4) = 4$

5. $(9 + 12) \div (7 - 4) = 7$



Create some of your own for a partner.

Hide
Answers

Which Operation

Complete these number sentences by putting in operations.

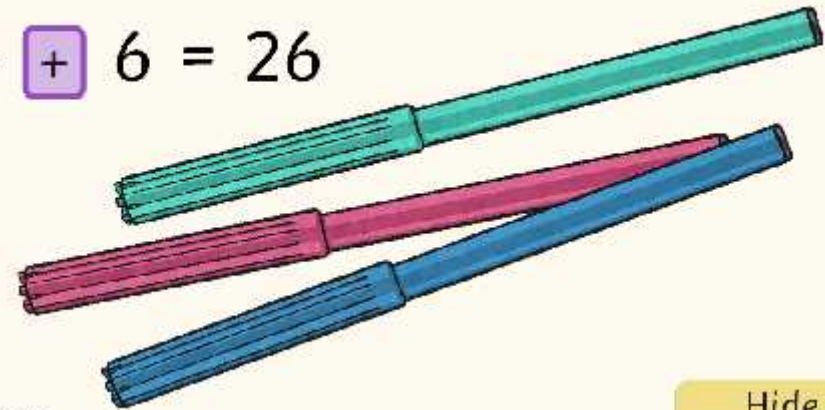
1. $5 \square 4 \square 6 = 7$

2. $5 \square 4 \square 6 = 3$

3. $5 \square 4 \square 6 = 29$

4. $5 \square 4 \square 6 = 15$

5. $5 \square 4 \square 6 = 26$



Create some of your own for a partner.

Hide
Answers

Make 10

How many different ways can you write a number sentence using the numbers 2, 3, 4 and 5, where the answer is 10? Use any operation, but each number can only be used once in any number sentence.


$$2 \times 5$$

$$3 \times 4 - 2$$

$$4 \times 5 \div 2$$

$$(4 - 2) \times 5$$

$$2 + 3 + 5$$

$$2 \times 5 \times (4 - 3)$$

other answers possible

What about using a 6 as well?

Or try 4 other numbers and a different total.

Hide
Answers

Many Answers

How many different answers can you make using the numbers 3, 4 and 5 to create different number sentences?



1. Using 1 operation
2. Using two operations but no brackets
3. Using two operations with brackets, with answers not found with using no brackets.

Show
Answers

Many Answers

Using 1 operation:

$$3 + 4 = 7$$

$$3 + 5 = 8$$

$$4 + 5 = 9$$

$$5 - 3 = 2$$

$$5 - 4 = 1$$

$$4 - 3 = 1$$

$$3 - 5 = -2$$

$$4 - 5 = -1$$

$$3 - 4 = -1$$

$$3 \times 4 = 12$$

$$3 \times 5 = 15$$

$$4 \times 5 = 20$$

$$5 \div 3 = 1\frac{2}{3}$$

$$5 \div 4 = 1\frac{1}{4}$$

$$4 \div 3 = 1\frac{1}{3}$$

$$3 \div 5 = \frac{3}{5}$$

$$4 \div 5 = \frac{4}{5}$$

$$3 \div 4 = \frac{3}{4}$$

Many Answers

Using 2 operations but no brackets:

There are 6 ways the numbers can be organised:

3 4 5, 3 5 4, 4 5 3, 4 3 5, 5 4 3, 5 3 4.

There are 16 ways the operations can be ordered:

++, +-, +×, +÷, etc.

You will find that sometimes you get the same answer. Sometimes, the number sentences will produce the same answer.

Many Answers

Using 2 operations but no brackets:

$$3 + 4 + 5 = 12$$

$$3 + 4 - 5 = 2$$

$$3 + 4 \times 5 = 23$$

$$3 + 4 \div 5 = 3\frac{4}{5}$$

$$3 - 4 + 5 = -6$$

$$3 - 4 - 5 = -6$$

$$3 - 4 \times 5 = -17$$

$$3 - 4 \div 5 = 2\frac{1}{5}$$

$$3 \times 4 + 5 = 17$$

$$3 \times 4 - 5 = 7$$

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

$$3 \times 4 \div 5 = 2\frac{2}{5}$$

$$3 \div 4 + 5 = 5\frac{3}{4}$$

$$3 \div 4 - 5 = -4\frac{1}{4}$$

$$3 \div 4 \times 5 = 3\frac{3}{4}$$

$$3 \div 4 \div 5 = \frac{3}{20}$$

$$4 + 3 + 5 = 12$$

$$4 + 3 - 5 = 2$$

$$4 + 3 \times 5 = 19$$

$$4 + 3 \div 5 = 4\frac{3}{5}$$

$$4 - 3 + 5 = -4$$

$$4 - 3 - 5 = -2$$

$$4 - 3 \times 5 = -11$$

$$4 - 3 \div 5 = 3\frac{2}{5}$$

$$4 \times 3 + 5 = 17$$

$$4 \times 3 - 5 = 7$$

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

$$4 \times 3 \div 5 = 2\frac{2}{5}$$

$$4 \div 3 + 5 = 6\frac{1}{3}$$

$$4 \div 3 - 5 = -3\frac{2}{3}$$

$$4 \div 3 \times 5 = 6\frac{2}{3}$$

$$4 \div 3 \div 5 = \frac{4}{15}$$

$$5 + 4 + 3 = 12$$

$$5 + 4 - 3 = 6$$

$$5 + 4 \times 3 = 17$$

$$5 + 4 \div 3 = 6\frac{1}{3}$$

$$5 - 4 + 3 = -2$$

$$5 - 4 - 3 = -2$$

$$5 - 4 \times 3 = -7$$

$$5 - 4 \div 3 = 3\frac{2}{3}$$

$$5 \times 4 + 3 = 23$$

$$5 \times 4 - 3 = 17$$

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

$$5 \times 4 \div 3 = 6\frac{2}{3}$$

$$5 \div 4 + 3 = 4\frac{1}{4}$$

$$5 \div 4 - 3 = -1\frac{3}{4}$$

$$5 \div 4 \times 3 = 3\frac{3}{4}$$

$$5 \div 4 \div 3 = \frac{5}{12}$$

Repeated answers in purple.

$$3 + 5 + 4 = 12$$

$$3 + 5 - 4 = 4$$

$$3 + 5 \times 4 = 23$$

$$3 + 5 \div 4 = 4\frac{1}{4}$$

$$3 - 5 + 4 = 2$$

$$3 - 5 - 4 = -6$$

$$3 - 5 \times 4 = -17$$

$$3 - 5 \div 4 = 1\frac{3}{4}$$

$$3 \times 5 + 4 = 19$$

$$3 \times 5 - 4 = 11$$

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

$$3 \times 5 \div 4 = 3\frac{3}{4}$$

$$3 \div 5 + 4 = 4\frac{3}{5}$$

$$3 \div 5 - 4 = -3\frac{2}{5}$$

$$3 \div 5 \times 4 = 2\frac{2}{5}$$

$$3 \div 5 \div 4 = \frac{3}{20}$$

$$4 + 5 + 3 = 12$$

$$4 + 5 - 3 = 6$$

$$4 + 5 \times 3 = 19$$

$$4 + 5 \div 3 = 5\frac{2}{3}$$

$$4 - 5 + 3 = -4$$

$$4 - 5 - 3 = -4$$

$$4 - 5 \times 3 = -11$$

$$4 - 5 \div 3 = 2\frac{1}{3}$$

$$4 \times 5 + 3 = 23$$

$$4 \times 5 - 3 = 17$$

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

$$4 \times 5 \div 3 = 6\frac{2}{3}$$

$$4 \div 5 + 3 = 3\frac{4}{5}$$

$$4 \div 5 - 3 = -2\frac{1}{5}$$

$$4 \div 5 \times 3 = 2\frac{2}{5}$$

$$4 \div 5 \div 3 = \frac{4}{15}$$

$$5 + 3 + 4 = 12$$

$$5 + 3 - 4 = 4$$

$$5 + 3 \times 4 = 17$$

$$5 + 3 \div 4 = 5\frac{3}{4}$$

$$5 - 3 + 4 = -2$$

$$5 - 3 - 4 = -2$$

$$5 - 3 \times 4 = -7$$

$$5 - 3 \div 4 = 4\frac{1}{4}$$

$$5 \times 3 + 4 = 19$$

$$5 \times 3 - 4 = 11$$

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

$$5 \times 3 \div 4 = 3\frac{3}{4}$$

$$5 \div 3 + 4 = 5\frac{2}{3}$$

$$5 \div 3 - 4 = -2\frac{1}{3}$$

$$5 \div 3 \times 4 = 6\frac{2}{3}$$

$$5 \div 3 \div 4 = \frac{5}{12}$$

Many Answers

Using 2 operations with no brackets:

Some of the number calculations produce the same answers. These are shown in purple on the following slide. (1st click)

Sometimes brackets make no difference to the answer given e.g. $4 + (3 + 5)$ and $4 + 3 + 5$. On the following slide you will find a range of answers that can only be given when using brackets with the specified numbers. (2nd click)

Many Answers

Using 2 operations with brackets:

Repeated answers in purple.

$$(3 + 4) \times 5 = 35$$

$$(3 + 4) \div 5 = 1\frac{2}{5}$$

$$3 - (4 + 5) = -6$$

$$3 - (4 - 5) = 4$$

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

$$(3 - 4) \div 5 = -\frac{1}{5}$$

$$3 \times (4 + 5) = 27$$

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

$$3 \div (4 + 5) = \frac{1}{3}$$

$$3 \div (4 - 5) = -3$$

$$(4 + 3) \times 5 = 35$$

$$(4 + 3) \div 5 = 1\frac{2}{5}$$

$$4 - (3 + 5) = -4$$

$$4 - (3 - 5) = 6$$

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

$$(4 - 3) \div 5 = \frac{1}{5}$$

$$4 \times (3 + 5) = 32$$

$$4 \times (3 - 5) = 7$$

$$4 \div (3 + 5) = \frac{1}{2}$$

$$4 \div (3 - 5) = -2$$

$$(5 + 4) \times 3 = 27$$

$$(5 + 4) \div 3 = 3$$

$$5 - (4 + 3) = -2$$

$$5 - (4 - 3) = 4$$

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

$$(5 - 4) \div 3 = \frac{1}{3}$$

$$5 \times (4 + 3) = 35$$

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

$$5 \div (4 + 3) = \frac{5}{7}$$

$$5 \div (4 - 3) = 5$$

$$(3 + 5) \times 4 = 32$$

$$(3 + 5) \div 4 = 2$$

$$3 - (5 + 4) = -6$$

$$3 - (5 - 4) = 2$$

$$(3 - 5) \times 4 = -8$$

$$(3 - 5) \div 4 = -\frac{1}{2}$$

$$3 \times (5 + 4) = 27$$

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

$$3 \div (5 + 4) = \frac{1}{3}$$

$$3 \div (5 - 4) = 3$$

$$(4 + 5) \times 3 = 27$$

$$(4 + 5) \div 3 = 3$$

$$4 - (5 + 3) = -4$$

$$4 - (5 - 3) = 2$$

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

$$(4 - 5) \div 3 = -\frac{1}{3}$$

$$4 \times (5 + 3) = 32$$

$$4 \times (5 - 3) = 8$$

$$4 \div (5 + 3) = \frac{1}{2}$$

$$4 \div (5 - 3) = 2$$

$$(5 + 3) \times 4 = 32$$

$$(5 + 3) \div 4 = 2$$

$$5 - (3 + 4) = -2$$

$$5 - (3 - 4) = 6$$

$$(5 - 3) \times 4 = 8$$

$$(5 - 3) \div 4 = \frac{1}{2}$$

$$5 \times (3 + 4) = 35$$

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

$$5 \div (3 + 4) = \frac{5}{7}$$

$$5 \div (3 - 4) = -5$$

