

# EQUIVALENT NUMBER SENTENCES EXPLAINING THE EQUALS SIGN MEANS EQUALITY.

## INVESTIGATIONS OVERVIEW PAGE

THIS PAGE IS A SUMMARY OF THE INVESTIGATIONS THAT STUDENTS MAY ENGAGE IN TO DEEPEN THEIR RELATIONAL UNDERSTANDING. INVESTIGATIONS WITH INSTRUCTIONS TO STUDENTS FOLLOW ON SUBSEQUENT PAGES.

- Children are given one side of an equals sign, for example,  $3 + 4 =$ . They come up with as many different ways as they can to make the number sentence true. For example, they could record,  $3 + 4 = 2 + 5$ ,  $3 + 4 = 7$ ,  $3 + 4 = 10 - 3$  etc. *Reflection: What does the equals sign mean?*
- In pairs, children have an equal arm balance with an equals sign in the middle. They select a card and place the number of blocks in each side. They break the blocks in each side into different parts and record equivalent number sentences. *Reflection: What does the equals sign mean?*
- In pairs, each child selects a numeral card. They work out how many they need to add or subtract from their number to make their friend's number. Each child records a number sentence. For example, child A has 4 and child B has 7. Child A adds 3 to his number and record  $4 + 3 = 7$ . Child B subtract 3 from his card and records,  $7 - 3 = 4$ . *Reflection: What does the equals sign mean?*
- In pairs, each child records expressions that equal a given number, for example, 7. They place their expressions on either side of the equals sign and record the number sentence. For example, child A records  $9 - 2$  and child B records  $5 + 2$ . They place their expressions on either side of the equals sign and record  $5 + 2 = 9 - 2$ . *Reflection: What does the equals sign mean?*
- In pairs, children have a set of dominoes. They find dominoes with the same total number of dots. They record all of the ways the dots are arrange in equivalent number sentences. For example, 7 dots may be arranged on dominoes as 1 and 6, 2 and 5, 3 and 4, 4 and 3, 5 and 2 or 6 and 1. The children's equivalent number sentences could include  $1 + 6 = 2 + 5$ ,  $4 + 3 = 3 + 4$ . *Reflection: What does the equals sign mean?*
- In small groups, children each record an expression that equals a given number, for example, 7. They place the expressions in the centre pf the table and record as many equivalent number sentences as they can. For example, 4 children may record,  $3 + 4$ ,  $9 - 2$ ,  $5 + 2$  and  $10 - 3$ . The equivalent number sentences include  $3 + 4 = 5 + 2$ ,  $5 + 2 = 9 - 2$ ,  $10 - 3 = 5 + 2$ ,  $3 + 4 = 9 - 2$ ,  $9 - 2 = 10 - 3$ ,  $3 + 4 = 10 - 3$  etc. *Reflection: What does the equals sign mean?*
- In pairs, children select or create missing number sentences, for example,

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

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

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

$$\underline{\quad} - \underline{\quad} = \underline{\quad} - \underline{\quad}$$
 *Reflection: What does the equals sign mean?*

## Equivalent Number Sentences

### Explaining the Equals Sign Means Equality

Record one side of an equals sign, for example,  $3 + 4 =$ .

Come up with some ways to make the number sentence true.

For example, you may record,

- $3 + 4 = 2 + 5$
- $3 + 4 = 7$
- $3 + 4 = 10 - 3$  etc.

Reflection: What does the equal sign mean?

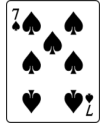
# Equivalent Number Sentences

## Explaining the Equals Sign Means Equality

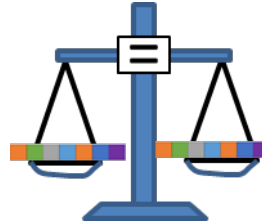
Sit with a friend.

Have an equal arm balance with an equals sign in the middle.

They select a card, for example,



Place the number of blocks in each side.



Break the blocks in each side into different parts, for example,



Record the equivalent number sentence, for example,  $5 + 2 = 4 + 3$

Reflection: What does the equals sign mean?

# Equivalent Number Sentences

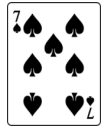
## Explaining the Equals Sign Means Equality

Sit with a friend.

Each of you select a card, for example, you select



your friend selects



Work out how many you need to add or subtract from your number to make your friend's number.

Each of you record a number sentence.

For example,

- You need to add 2 to your number so you record  $5 + 2 = 7$ .
- Your friend needs to subtract 2 from their number and records,  $7 - 2 = 5$ .

Reflection: What does the equals sign mean?

# Equivalent Number Sentences

## Explaining the Equals Sign Means Equality

Sit with a friend.

Select a card, for example,



Each of you record an addition or subtraction number sentence that equals the number, for example, you record  $5 + 2 = 7$  and your friend records  $9 - 2 = 7$ .

Record your number sentences on each side of an equals sign, for example, record  $5 + 2 = 9 - 2$ .

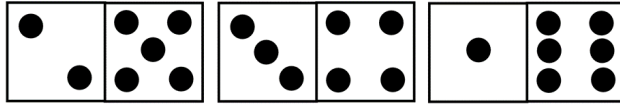
Reflection: What does the equals sign mean?

# Equivalent Number Sentences

## Explaining the Equals Sign Means Equality

Have a set of dominoes.

Find dominoes with the same total number of dots, for example, 7



Record all of the ways the dots are arranged, for example,

$$1 + 6$$

$$2 + 5$$

$$3 + 4$$

$$4 + 3$$

$$5 + 2$$

$$6 + 1$$

Record number sentences, for example,

$$1 + 6 = 2 + 5$$

$$4 + 3 = 3 + 4$$

$$2 + 5 = 3 + 4$$

Reflection: What does the equals sign mean?

# Equivalent Number Sentences

## Explaining the Equals Sign Means Equality

Sit in a small group.

Select a card, for example,



Each of you record a number sentence that equals the number on a piece of paper, for example,

$$\boxed{3 + 4 = 7} \quad \boxed{9 - 2 = 7} \quad \boxed{5 + 2 = 7} \quad \boxed{10 - 3 = 7}$$

Place the number sentences in the centre of the table and record as many number sentences as you can, for example,

$$3 + 4 = 5 + 2$$

$$5 + 2 = 9 - 2$$

$$10 - 3 = 5 + 2$$

$$3 + 4 = 9 - 2$$

$$9 - 2 = 10 - 3$$

$$3 + 4 = 10 - 3$$

Reflection: What does the equals sign mean?

# Equivalent Number Sentences

## Explaining the Equals Sign Means Equality

Select or create missing number sentences, for example,

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

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

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

$$\underline{\quad} - \underline{\quad} = \underline{\quad} - \underline{\quad}$$

Reflection: What does the equals sign mean?