

## Problem Solving and Mathematical Language

### Estimation

### Guess Check and Adjust

An expression is part of a number story.

**15 x 7 = 85 is a number story.**

85 is a mathematical expression

**15 x 7 = 85**

15 x 7 is a mathematical expression

The **sum** of 8 and 7 is 15

$$8 + 7 = 15$$

To find the sum we add.

The **product** of 8 and 7 is 35

$$8 \times 7 = 35$$

To find the quotient we multiply.

15 and 5 has a **difference** of 10

$$15 - 5 = 10$$

To find the difference we take.

We can also count on to find the difference.

$$5 + \underline{\quad} = 15$$

**5 + 10 = 15 so the difference of 15 and 5 is 10**

The **quotient** of 15 and 5 is 3

$$15 \div 5 = 3$$

To find the quotient we divide.

Mark the correct answer with an x

What expression has a sum of 55?

5 x 11      50 + 5      60 - 5      110 ÷ 2

What expression has a product of 55?

5 x 11      50 + 5      60 - 5      110 ÷ 2

What expression has a difference of 55?

5 x 11      50 + 5      60 - 5      110 ÷ 2

What expression has a quotient of 55?

5 x 11      50 + 5      60 - 5      110 ÷ 2

What expression has a product of 80?

5 + 75      4 x 20      90 - 10      240 ÷ 4

What expression has a quotient of 10?

40 ÷ 10      8 x 5      40 ÷ 4      110 - 100

What expression has a difference of 30?

2 x 15      15 + 15      45 - 15      45 - 30

What expression has a sum of 55?

5 x 11      50 + 5      60 - 5      110 ÷ 2

What is the product of 3 and 6

What is the quotient of 12 and 3

What is the sum of 15 and 20

18 and 7 has a difference of

What is the product of 20 and 5

What is the quotient of 24 and 2

What is the sum of 17 and 21

18 and 21 has a difference of

Which expression has a value between 900 and 1100

$$9 \times 10 \quad 1200 + 100 \quad 100 \div 10 \quad 850 + 100$$

Which expression has a value between 900 and 1100

$$9 \times 100 \quad 1300 - 100 \quad 100 \times 20 \quad 850 - 100$$

Which expressions has a value between 400 and 500

$$9 \times 50 \quad 1000 - 400 \quad 100 + 320 \quad 900 - 600$$

Which expressions has a value between 600 and 800

$$9 \times 50 \quad 1300 - 600 \quad 1400 \div 2 \quad 750 + 100$$

For more complex expression we need to ESTIMATE and use a problem-solving strategy like LOGICAL THINKING

Which expression has a value between 1000 and 1500?

a/  $5 \times 250$

b/  $58 \times 12$

c/  $405 \times 3$

d/  $4805 \div 6$

$5 \times 200 = 1000$

$5 \times 300 = 1500$

So

$5 \times 250$  must  
between 1000  
and 1500



$58 \times 10 = 580$

$60 \times 12 = 720$

So...  $58 \times 12$   
could not be  
between 1000  
and 1500



$405 + 405 + 405$

$810 + 405$

$1215$

$4800 \div 6$

$6 \times 8 = 48$

$6 \times 80 = 480$

$6 \times 800 = 4800$

$4800 \div 6 = 800$



Which expression has a value between 2000 and 2200?

Mark the correct answer with an x

Show your thinking in the boxes below.

a/  $14 \times 56$

b/  $750 \times 3$

c/  $1207 \div 6$

d/  $4000 \div 10$

Which expression has a value closest to 250?

Mark the correct answer with an x

Show your thinking in the boxes below.

a/  $14 \times 18$

b/  $55 \times 4$

c/  $500 \div 3$

d/  $32 \times 11$

Which expression has a value closest to 400?

Mark the correct answer with an x

Show your thinking in the boxes below.

a/  $15 \times 19$

b/  $c/ 55 \times 6$

c/  $1606 \div 4$

d/  $1215 \div 4$

### Solve by Estimating

James has 149 Pokemon cards. He has them in bags. There are between 28 and 32 cards in each bag.

How many bags of Pokemon cards does he have?

3                    4                    5

$$150 \div 3 = 50$$

$$160 \div 4 = 40$$

$$150 \div 5 = 30$$

### Solve Using Guess Check and Adjust

James has 149 Pokemon cards. He has them in bags. There are between 28 and 32 cards in each bag.

How many bags of Pokemon cards does he have?

3                    4                    5

$$3 \times 50 = 150$$

$$4 \times 30 = 120$$

$$5 \times 30 = 150$$

$$3 \times 49 = 147$$

$$4 \times 35 = 140$$

$$5 \times 29 = 145$$

$$147 \div 3 = 49$$

$$4 \times 36 = 144$$

29 and 30 are between 28 and 32 so he must have 5 bags

$$4 \times 37 = 148$$

There are 121 chairs in the hall. They are arranged them in rows. There are between 28 and 32 chairs in each row.

Mark the correct answer with an x

How many rows of chairs must there be

3                    4                    5

Show your thinking.

James has 118 Pokemon cards. He has them in bags. There are between 25 and 30 cards in each bag.

Mark the correct answer with an x

How many bags of Pokemon cards does he have?

3                    4                    5

Show your thinking.

There are 207 children in a school. There are between 25 and 30 children in each class.

Mark the correct answer with an x

How many classes are there ?

5                    6                    7

Show your thinking.