

# Reasoning and Problem Solving

## Step 1: Comparing Statements

### National Curriculum Objectives:

Mathematics Year 3: (3C6) [Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables](#)

Mathematics Year 3: (3C7) [Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods](#)

### Differentiation:

Questions 1, 4 and 7 (Reasoning)

**Developing** Use known multiplication facts to explain a multiplication error using arrays. Includes multiples of 2, 3, 4, 5 and 8. Using the words 'is equal to' to support the inequality symbol.

**Expected** Use known multiplication facts to explain a multiplication and division error using arrays. Includes multiples of 2, 3, 4, 5 and 8.

**Greater Depth** Use known multiplication facts to explain multiplication and division errors. Includes multiples of 2, 3, 4, 5 and 8.

Questions 2, 5 and 8 (Problem Solving)

**Developing** Use knowledge of multiplication facts to insert digit cards into a comparison statement to make it correct. Four digit cards and two missing numbers. Includes multiples of 2, 3, 4, 5 and 8. Using the words 'is greater than' and 'is less than' to support the inequality symbols. Scaffolding given instead of pictorial support.

**Expected** Use knowledge of multiplication facts to insert digit cards into a comparison statement to make it correct. Six digit cards and two missing numbers. Includes multiples of 2, 3, 4, 5 and 8.

**Greater Depth** Use knowledge of multiplication facts to insert digit cards into a comparison statement to make it correct. Six digit cards and three missing numbers. Includes multiples of 2, 3, 4, 5 and 8.

Questions 3, 6 and 9 (Reasoning)

**Developing** Use knowledge of multiplication to explain why a statement is incorrect. Includes multiples of 2, 3, 4, 5 and 8. Pictorial support given. Using words to support the inequality symbols.

**Expected** Use knowledge of multiplication and repeated addition to explain why a statement is incorrect. Includes multiples of 2, 3, 4, 5 and 8.

**Greater Depth** Use knowledge of multiplication, division and addition to explain why a statement is incorrect. Includes multiples of 2, 3, 4, 5 and 8. Some statements include two operations.

More [Year 3 Multiplication and Division](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

## Comparing Statements

1a. Ella says,



$$8 \times 4 = 2 \times 4$$

is equal to



Is Ella correct? Explain how you know.



R

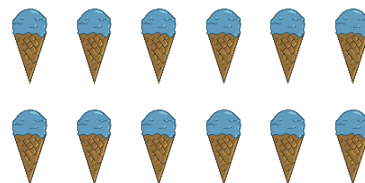
## Comparing Statements

1b. Jude says,



$$12 \times 3 = 2 \times 6$$

is equal to

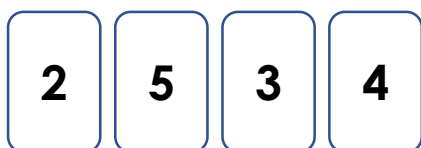


Is Jude correct? Explain how you know.



R

2a. Use the digit cards to complete the statement. Find 3 different possibilities.



$$\boxed{\phantom{0}} \times 5 > 2 \times \boxed{\phantom{0}}$$

is greater than



PS

2b. Use the digit cards to complete the statement. Find 3 different possibilities.



$$\boxed{\phantom{0}} \times 4 < 10 \times \boxed{\phantom{0}}$$

is less than



PS

3a. Spot the odd one out.



A.  $3 \times 2 < 4 \times 2$   
is less than



B.  $2 \times 2 > 2 \times 3$   
is greater than



C.  $4 \times 2 < 4 \times 4$   
is less than



D.  $3 \times 5 > 3 \times 4$   
is greater than

Explain why.

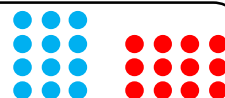


R

3b. Spot the odd one out.



A.  $2 \times 5 < 3 \times 4$   
is less than



B.  $4 \times 3 = 3 \times 4$   
is equal to



C.  $5 \times 2 = 5 \times 5$   
is equal to



D.  $5 \times 3 > 4 \times 3$   
is greater than

Explain why.



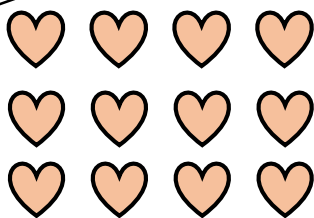
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## Comparing Statements

4a. Macy says,



$$12 \div 4 = 3 \times 4$$



Is Macy correct? Explain how you know.



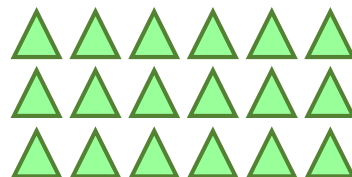
R

## Comparing Statements

4b. Isaac says,



$$18 \div 3 = 3 \times 6$$

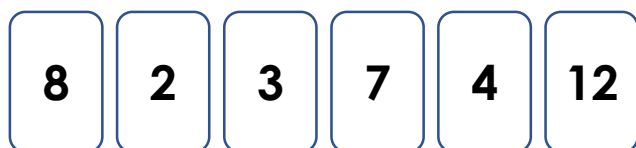


Is Isaac correct? Explain how you know.



R

5a. Use the digit cards to complete the statement. Find 3 different possibilities.

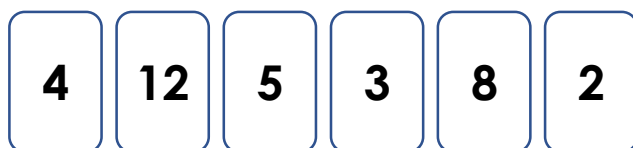


$$\square \times 4 > 6 \times \square$$



PS

5b. Use the digit cards to complete the statement. Find 3 different possibilities.



$$5 \times \square < \square \times 8$$



PS

6a. Spot the odd one out.

A.  $6 \times 3 > 8 \times 2$

B.  $4 \times 4 > 5 + 5 + 5$

C.  $5 \times 8 = 8 \times 5$

D.  $6 \times 2 < 4 + 4 + 4$

Explain why.



R

6b. Spot the odd one out.

A.  $4 \times 8 < 8 + 8 + 8$

B.  $8 \times 3 = 3 \times 8$

C.  $3 + 3 + 3 < 6 \times 2$

D.  $6 \times 5 > 4 \times 4$

Explain why.



R

## Comparing Statements

## Comparing Statements

7a. Skye says,



$$36 \div 3 = 6 \times 2 \text{ add } 2 \times 4$$

Is Skye correct? Explain how you know.



R

7b. Rakim says,



$$36 \div 4 = 7 \times 4 \text{ add } 4 \times 3$$

Is Rakim correct? Explain how you know.



R

8a. Use the digit cards to complete the statement. Find 3 different possibilities.

8 2 3 6 4 12

$$\square \times \square > 9 \times \square \text{ add } 5$$



PS

8b. Use the digit cards to complete the statement. Find 3 different possibilities.

4 12 5 3 8 2

$$11 \times \square \text{ add } 3 < \square \times \square$$



PS

9a. Spot the odd one out.

A.  $8 \times 5 < 6 \times 4 \text{ add } 8$

B.  $5 \times 8 > 8 \times 4 \text{ add } 4$

C.  $4 \times 8 < 5 \times 6 \text{ add } 5$

D.  $8 \times 3 = 4 \times 5 \text{ add } 4$

Explain why.



R

9b. Spot the odd one out.

A.  $8 \times 8 > 6 \times 8 \text{ add } 6$

B.  $8 \times 5 < 4 \times 6 \text{ add } 3$

C.  $3 \times 8 = 9 \times 2 \text{ add } 6$

D.  $6 \times 5 > 4 \times 4 \text{ add } 9$

Explain why.



R

## Reasoning and Problem Solving Comparing Statements

### Developing

- 1a. No,  $8 \times 4 = 32$  and  $2 \times 4 = 8$ . 8 is less than 32.
- 2a. Various answers, for example:  $5 \times 5 > 2 \times 2$ ;  $5 \times 2 > 2 \times 4$ ;  $5 \times 3 > 2 \times 4$
- 3a. B is the odd one out as the statement is incorrect.  $2 \times 2$  is less than  $2 \times 3$ .

### Expected

- 4a. No,  $12 \div 4 = 3$  and  $3 \times 4 = 12$ . So,  $12 \div 4$  is less than  $3 \times 4$ .
- 5a. Various answers, for example:  $12 \times 4 > 6 \times 2$ ;  $7 \times 4 > 6 \times 3$ ;  $4 \times 4 > 6 \times 2$
- 6a. D is the odd one out as the statement is incorrect.  $6 \times 2 = 12$  and  $4 + 4 + 4 = 12$ . The statement should be  $6 \times 2 = 4 + 4 + 4$ .

### Greater Depth

- 7a. No,  $36 \div 3 = 12$  and  $(6 \times 2 =) 12$  add  $(2 \times 4 =) 8 = 20$ . The statement should be  $36 \div 3 < 6 \times 2$  add  $2 \times 4$ .
- 8a. Various answers, for example:  $12 \times 8 > 9 \times 2$  add 5;  $6 \times 8 > 9 \times 3$  add 5;  $4 \times 8 > 9 \times 2$  add 5
- 9a. A is the odd one out as the statement is incorrect.  $8 \times 5 = 40$  and  $6 \times 4 = 24$  add 8 = 32. The statement should be  $8 \times 5 > 6 \times 4$  add 8.

## Reasoning and Problem Solving Comparing Statements

### Developing

- 1b. No,  $12 \times 3 = 36$  and  $2 \times 6 = 12$ . So,  $12 \times 3$  is greater than  $2 \times 6$ .
- 2b. Various answers, for example:  $2 \times 4 < 10 \times 8$ ;  $8 \times 4 < 10 \times 4$ ;  $3 \times 4 < 10 \times 8$
- 3b. C is the odd one out as the statement is incorrect.  $2 \times 5 = 10$  and  $5 \times 5 = 25$ . The statement should be  $2 \times 5 < 5 \times 5$ .

### Expected

- 4b. No,  $18 \div 3 = 6$  and  $3 \times 6 = 18$ . So,  $18 \div 3$  is less than  $3 \times 6$ .
- 5b. Various answers, for example:  $5 \times 2 < 12 \times 8$ ;  $5 \times 4 < 8 \times 8$ ;  $5 \times 3 < 4 \times 8$
- 6b. A is the odd one out as the statement is incorrect.  $4 \times 8 = 32$  and  $8 + 8 + 8 = 24$ . The statement should be  $4 \times 8 > 8 + 8 + 8$ .

### Greater Depth

- 7b. No,  $36 \div 4 = 9$  and  $(7 \times 4 =) 28$  add  $(4 \times 3 =) 12 = 40$ . The statement should be  $36 \div 4 < 7 \times 4$  add  $4 \times 3$ .
- 8b. Various answers, for example:  $11 \times 2$  add 3  $< 12 \times 8$ ;  $11 \times 3$  add 3  $< 12 \times 5$ ;  $11 \times 4$  add 3  $< 12 \times 8$
- 9b. B is the odd one out as the statement is incorrect.  $8 \times 5 = 40$  and  $4 \times 6 = 24$  add 3 = 27. The statement should be  $8 \times 5 > 4 \times 6$  add 3.