Tennessee Comprehensive Assessment Program

TCAP/CRA 2013

3

Task 2   Scoring Guide

Division Task

2. Division Task Scoring Guide

The CCSS for Mathematical Content (2 points)

3.OA.2   Interprets whole-number quotients of whole numbers. The student may do this by:

- identifying a number that can be divided by both 2 and 3, but cannot be divided by 4.

- identifying a number that can be divided by 3 and 4.

- stating that 4 is divisible by 2.

(1 Point)

3.OA.4   Writes correct division equations showing a dividend that can be divided by both 3 and 4 or by both 2 and 3. No incorrect equations are given.

(1 Point)

Total Content Points _____

The CCSS for Mathematical Practice (1 point)

MP7   Explains why all numbers that can be divided by both 3 and 4 can also be divided by 2.

(1 Point)

(MP7: Look for and make use of structure.)

Total Practice Points _____

Total Awarded Points _____

The CCSS for Mathematical Content Addressed in This Task

Represent and solve problems involving multiplication and division.

3.OA.2   Interpret whole-number quotients of whole numbers; e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*

3.OA.4   Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?*

The CCSS for Mathematical Practice*

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. **Look for and make use of structure.**

8. Look for and express regularity in repeated reasoning.

*Gray text indicates Mathematical Practices that are not addressed in this task.

Students' responses to a mathematical task provide evidence of what they understand and are able to do in relation to the standards and practices. Across tasks, this cumulative evidence shows students' understanding and abilities within a domain. When students do not respond completely to all parts of a task, they provide insufficient evidence of their mathematical understanding and abilities and therefore do not fully demonstrate the expectations of the standards and practices aligned with that task.

Task 2. Division Task

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

Divided by 2 | Divided by 3

(handwritten work)

L6

$1 \div 2$ $1 \div 3$

$2 \div 2$ ✓ $2 \div 3$

$6 \div 2 = 3$ ✓

$6 \div 3 = 2$ ✓ $3 \div 2$ $3 \div 3$ ✓

$6 \div 4$ $4 \div 2$ ✓ $4 \div 3$

$5 \div 2$ $5 \div 3$

b. Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.
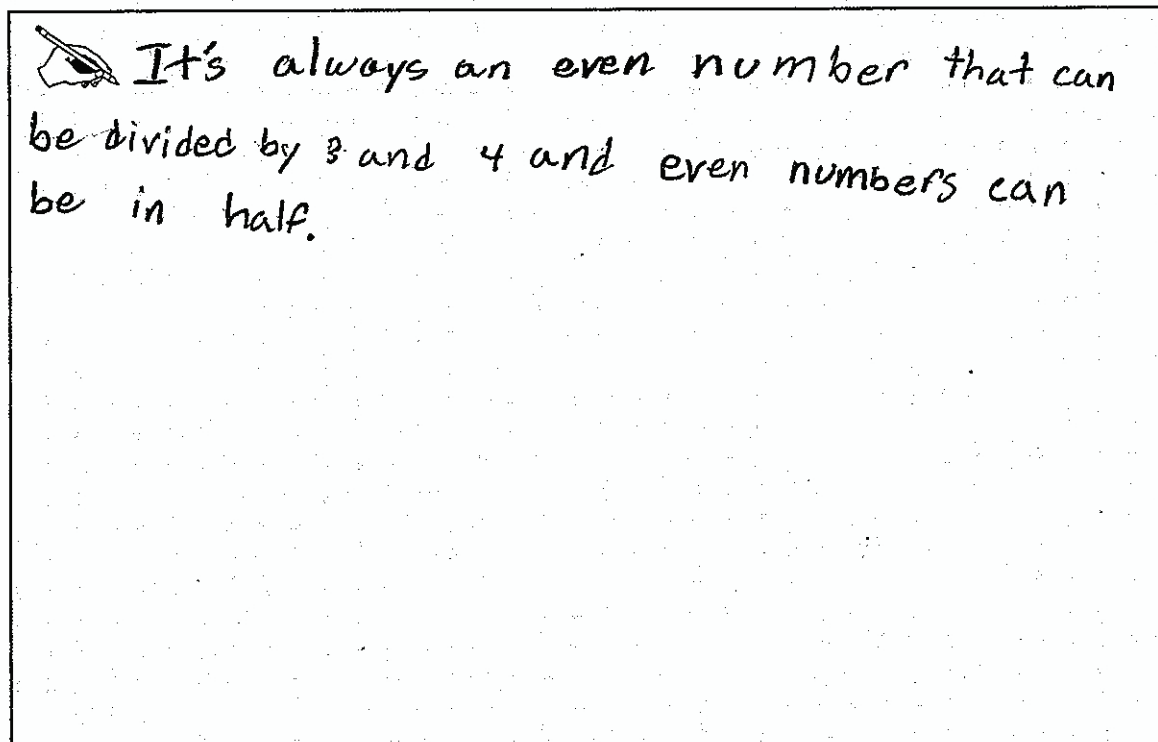
Divided by 3 | Divided by 4

(handwritten table with numbers 1–14)

L12
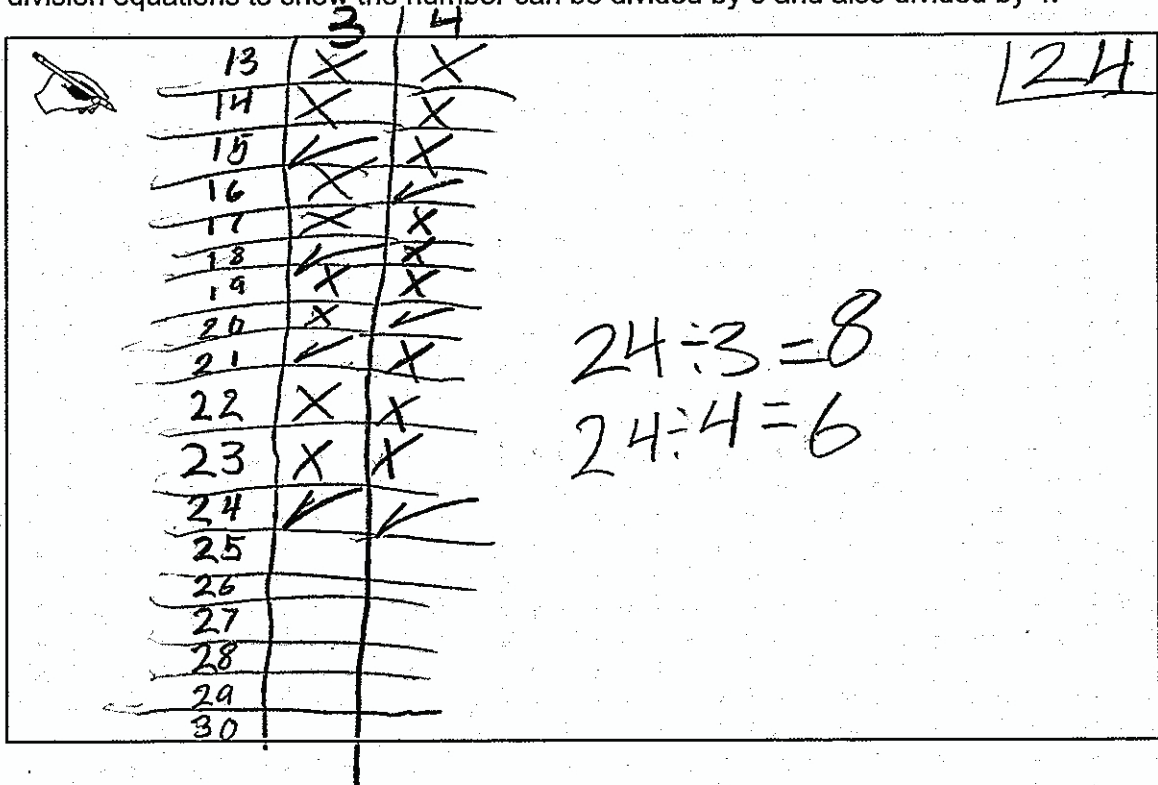
1,2,3,4,5,6,7,8,9,10,11
couldn't be divided by
3 and 4. But $12 \div 3 = 4$ and
$12 \div 4 = 3$.

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

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

	3	4	24
13	X	X	
14	X	X	
15	✓	X	
16	X	✓	
17	X	X	
18	✓	X	
19	X	X	
20	X	✓	
21	✓	X	
22	X	X	
23	X	X	
24	✓	✓	
25			
26			
27			
28			
29			
30			

$$24 \div 3 = 8$$
$$24 \div 4 = 6$$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

It's always an even number that can be divided by 3 and 4 and even numbers can be in half.

Anchor 1   Litho 365724

Total Content Points: 2   (3.OA.A.2, 3.OA.A.4)

Total Practice Points: 1   (MP7)

In Part A, the student correctly identifies 6 as a number that is divisible by both 2 and 3 but not divisible by 4, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). In Part A and in both halves of Part B, the student writes acceptable division equations. In the first half of Part B, the student writes two correct division equations showing a dividend (12) that can be divided by both 3 and 4 ($12 \div 3 = 4$ and $12 \div 4 = 3$) and no incorrect equations are given (3.OA.A.4). In Part C, the student's response ("It's always an even number that can be divided by 3 and 4, and even numbers can be in half") addresses both the 3 and the 4 and recognizes that the resulting numbers are even, and therefore can be divided by 2, thus explaining why all numbers that can be divided by 3 and 4 can also be divided by 2 (MP7).

Total Awarded Points: 3 out of 3

Task 2. Division Task

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

$$6 \div 2 = 3$$
$$6 \div 3 = 2$$
$$6 \div 4 = 1.5$$

My answer is 6, because 6 can be divided by 2,3,but not 4.

b. ✓ Identify a number that can be divided by 3 and also divided by 4. Write two division ✓ equations to show the number can be divided by 3 and also divided by 4.

12

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

Litho#: 373457

Identify a *different* number that can be divided by 3 and also divided by 4. Write two
division equations to show the number can be divided by 3 and also divided by 4.

24

$$24 \div 4 = 6$$
$$24 \div 3 = 8$$

c.   Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

Both 12 and 24 are both <u>even</u> numbers,
so you should be able to divide them
in 2 groups. That's why 12 and 24
will be divided into two groups.

$$12 \div 2 = 6$$
$$24 \div 2 = 12$$

Anchor 2   Litho 373457

Total Content Points: 2   (3.OA.A.2, 3.OA.A.4)
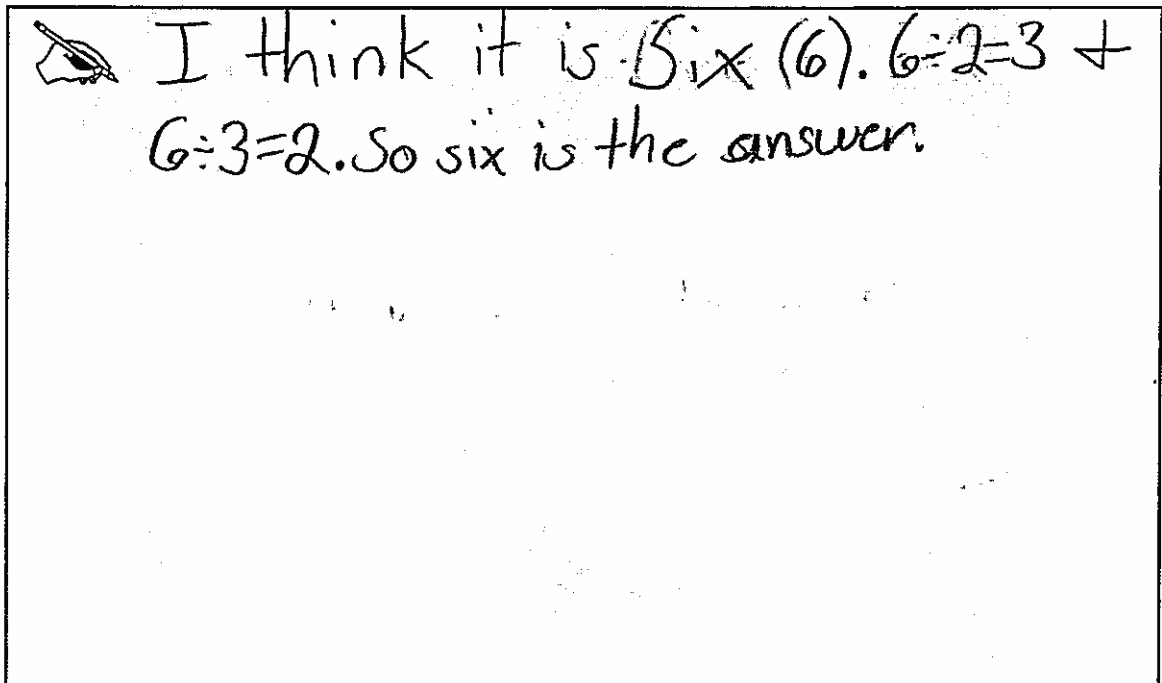
Total Practice Points: 1   (MP7)

In Part A, the student correctly identifies 6 as a number that can be divided by both 2 and 3, but cannot be divided by 4, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). In Part A and in both halves of Part B, the student writes acceptable division equations. In the first half of Part B, the student writes two correct division equations showing a dividend (12) that can be divided by both 3 and 4 ($12 \div 4 = 3$ and $12 \div 3 = 4$) and no incorrect equations are given (3.OA.A.4). In Part C, the student refers to two numbers (12, 24) that have been shown to be divisible by 3 and 4 in part B, and then states that they "are both even numbers, so you should be able to divide them in 2 groups," and also shows the appropriate division. (MP7).
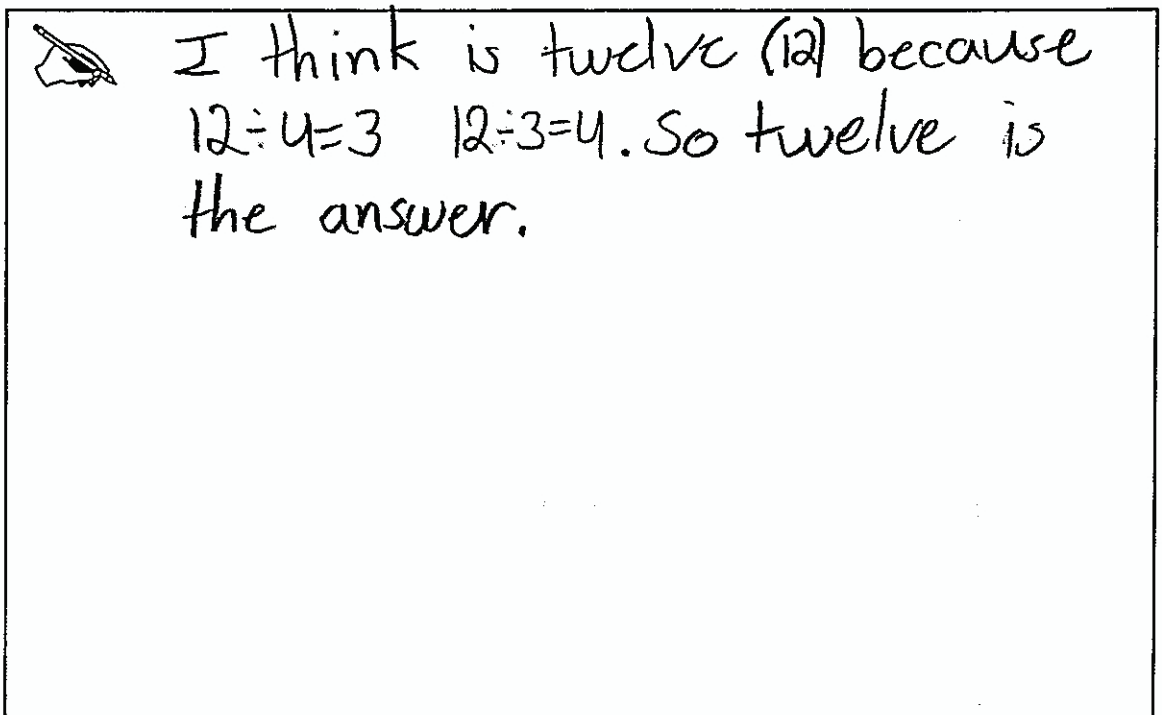
Total Awarded Points: 3 out of 3

Task 2. Division Task

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

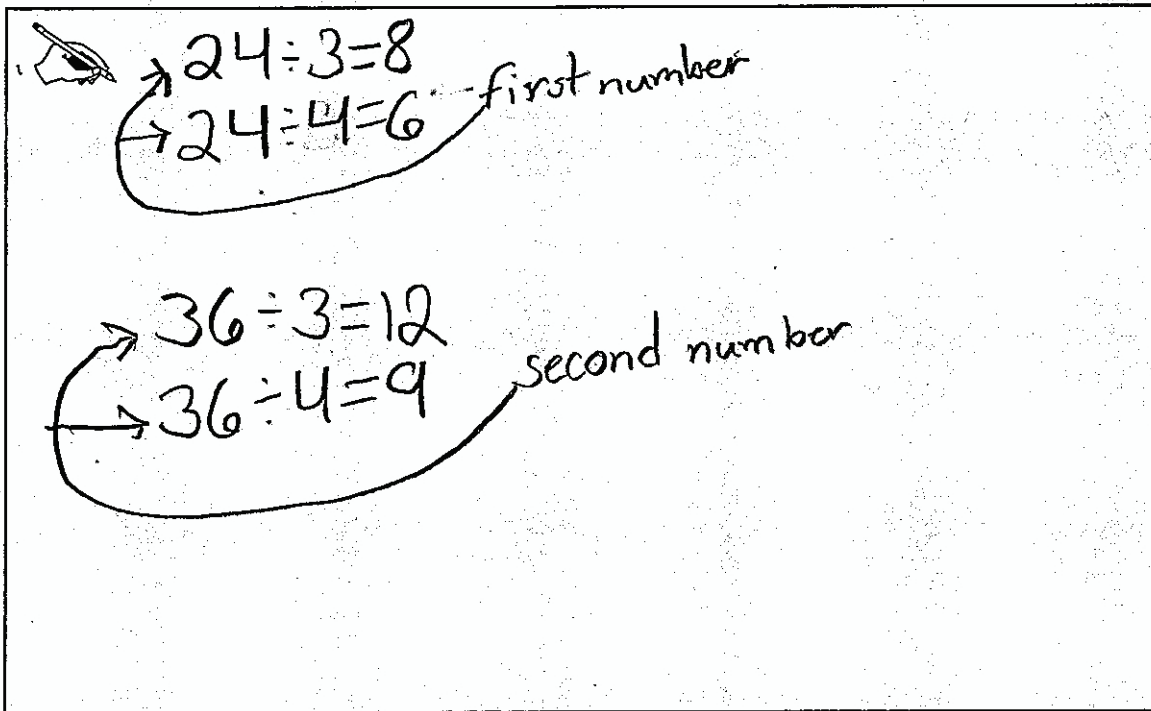> ✎ I think it is Six (6). 6÷2=3 + 6÷3=2. So six is the answer.
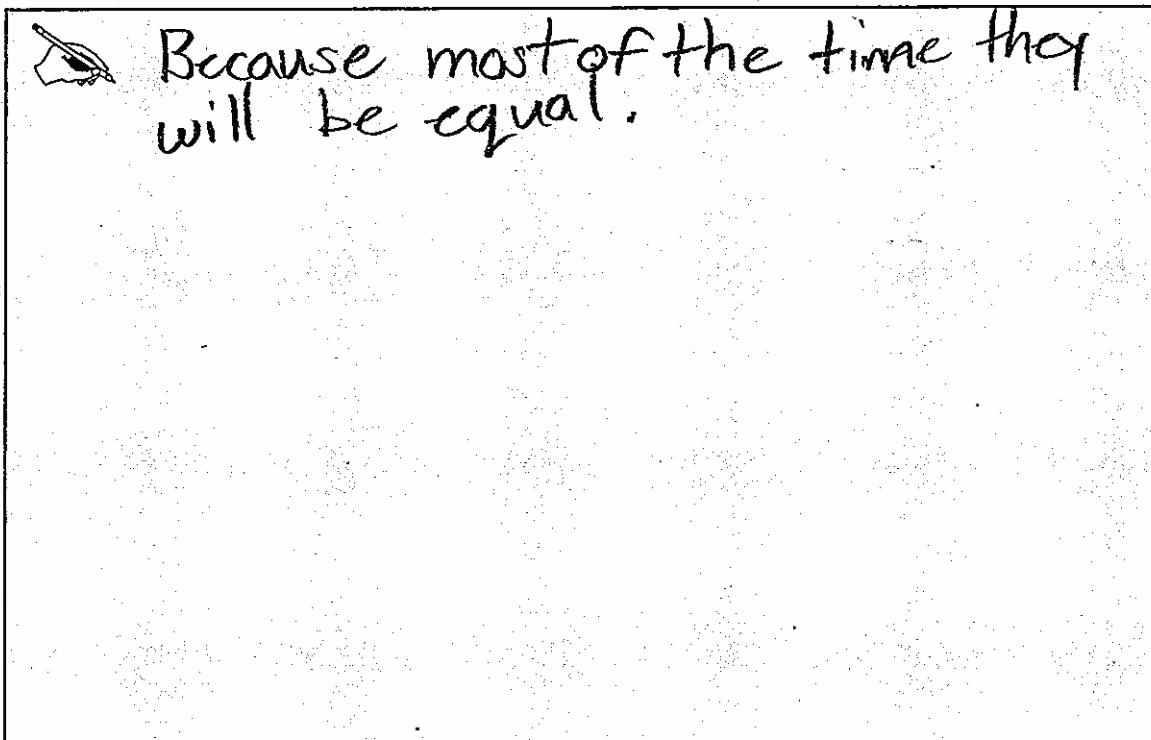
b. Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

> ✎ I think is twelve (12) because 12÷4=3 12÷3=4. So twelve is the answer.

Litho#: 372351

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$24 \div 3 = 8$
$24 \div 4 = 6$ — first number

$36 \div 3 = 12$
$36 \div 4 = 9$ — second number

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

Because most of the time they will be equal.

Anchor 3   Litho 372351

Total Content Points: 2   (3.OA.A.2, 3.OA.A.4)
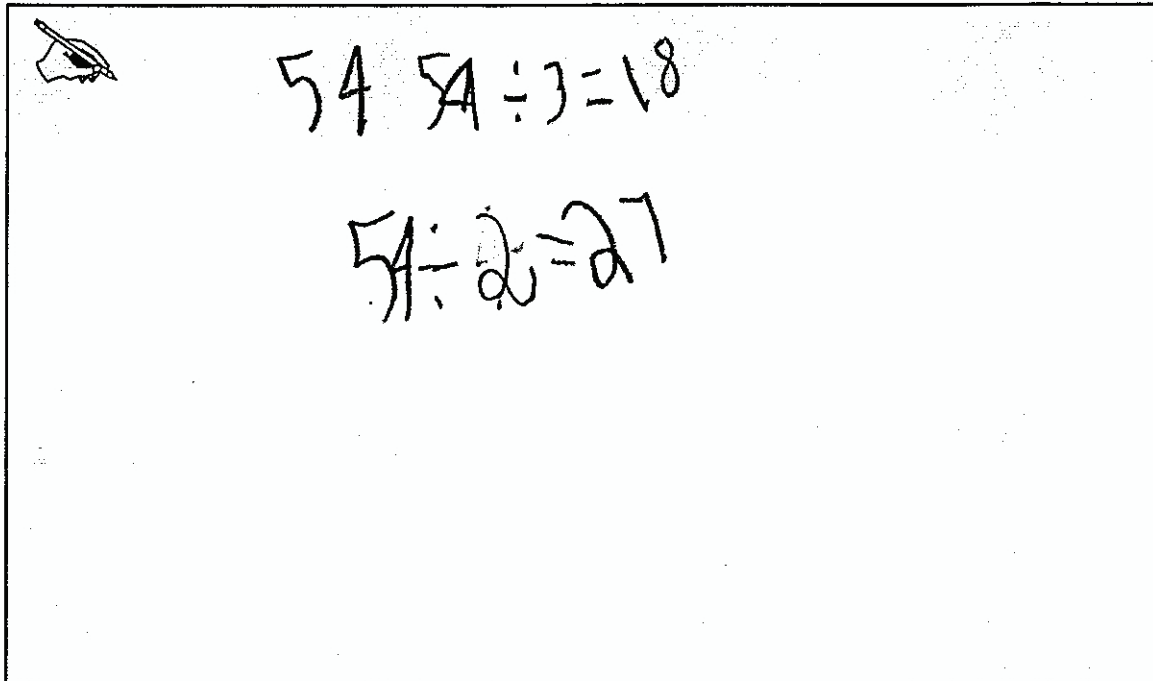
Total Practice Points: 0

In Part A, the student correctly identifies 6 as a number that is divisible by both 2 and 3 but not divisible by 4, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). In Part A and in both halves of Part B, the student writes acceptable division equations. In the second half of Part B, the student writes two correct division equations showing a dividend (24) that can be divided by both 3 and 4 ($24 \div 3 = 8$ and $24 \div 4 = 6$) and no incorrect equations are given (3.OA.A.4). In Part C, the student's response ("Because most of the time they will be equal") does not specifically address relationships between the given values to explain why numbers divisible by 3 and 4 are also divisible by 2 (no credit for MP7).
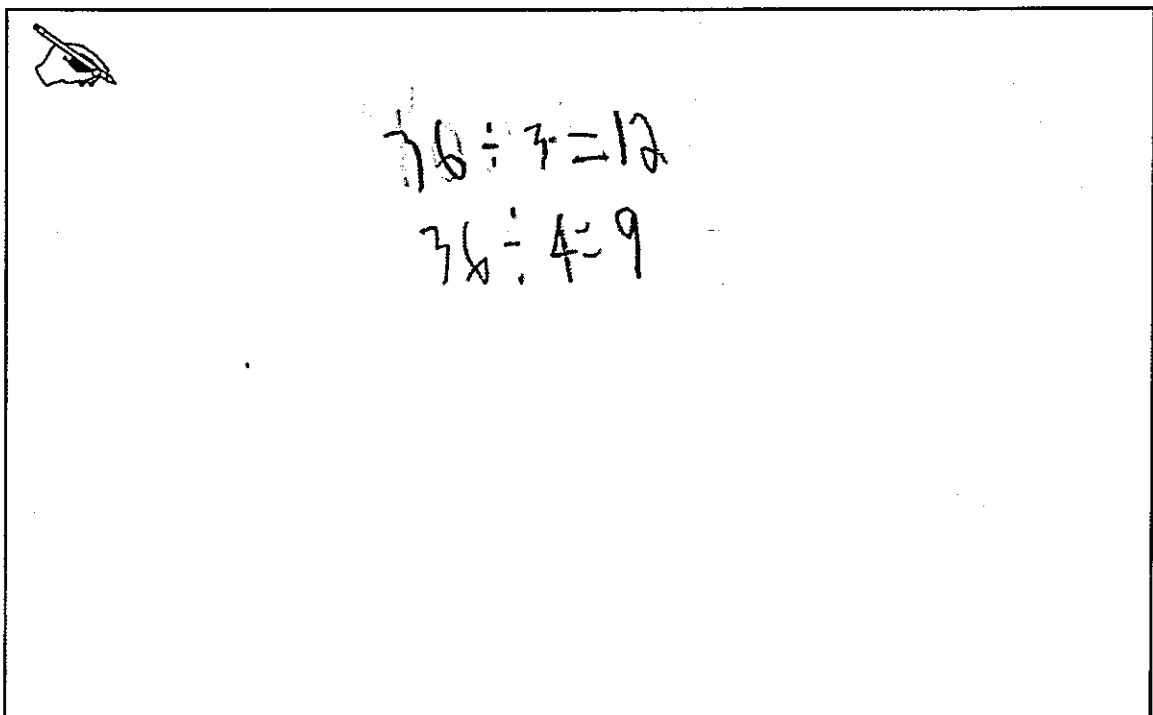
Total Awarded Points: 2 out of 3

Task 2. Division Task

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.
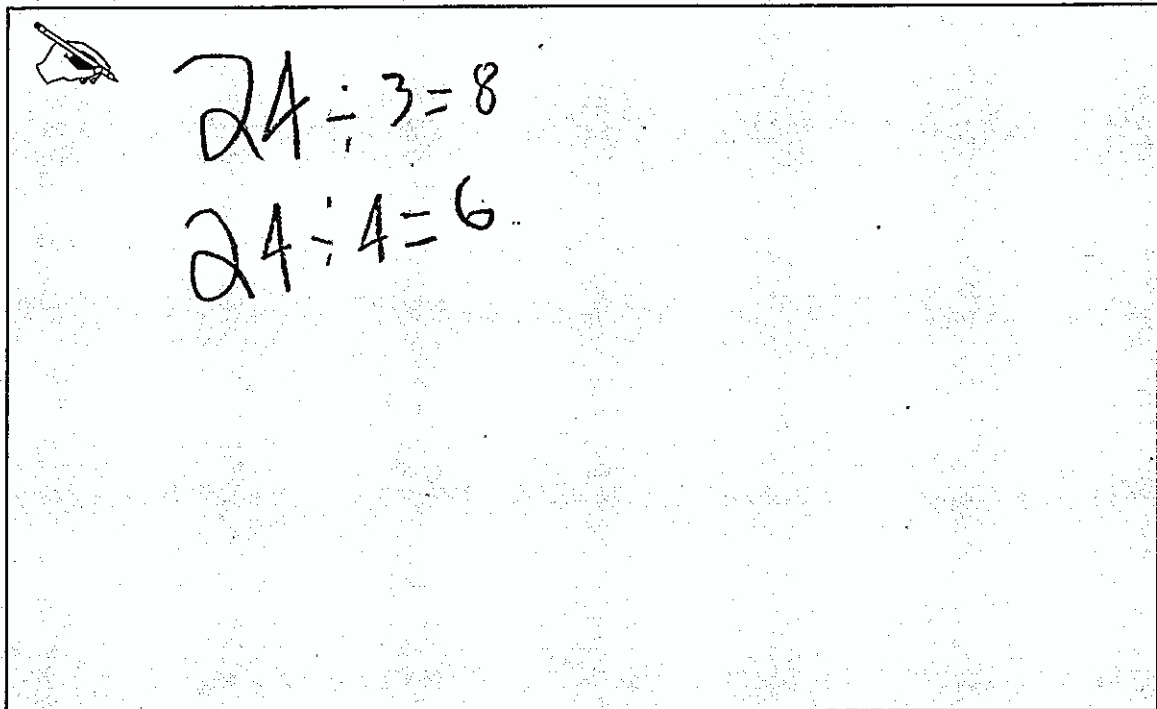
54   54 ÷ 3 = 18

54 ÷ 2 = 27

b. Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.
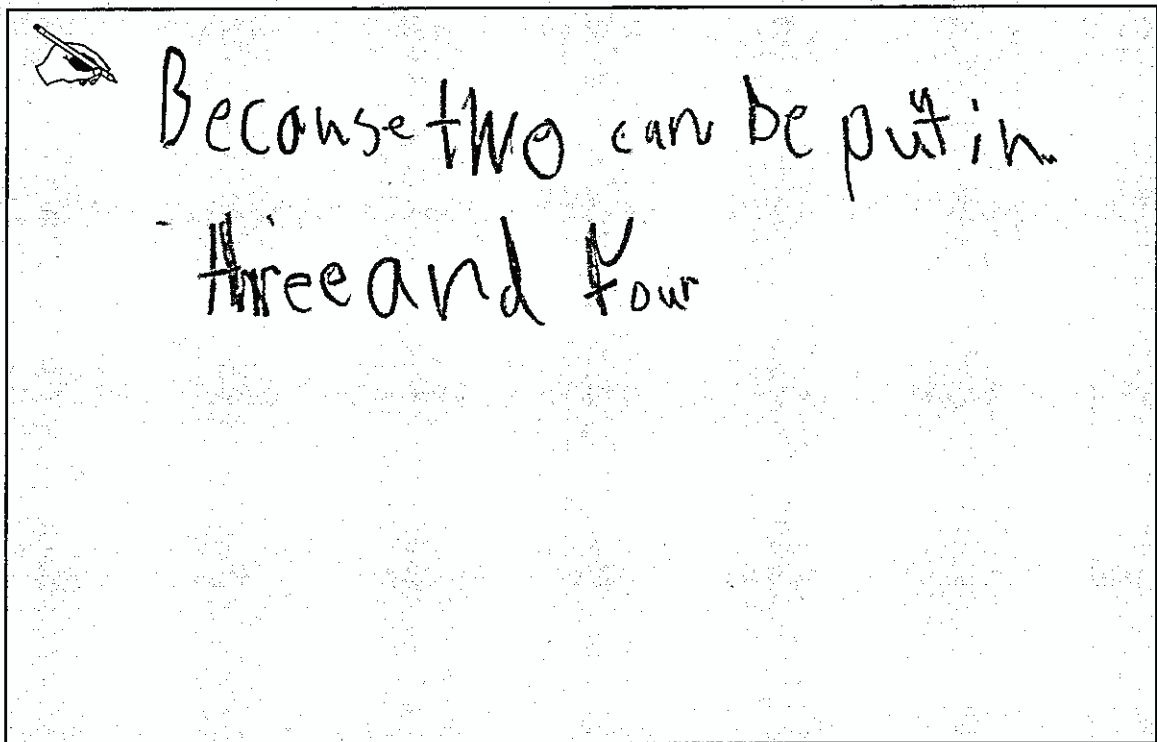
36 ÷ 3 = 12

36 ÷ 4 = 9

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$24 \div 3 = 8$$
$$24 \div 4 = 6$$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

Because two can be put in three and four

Anchor 4   Litho 350361

Total Content Points: 2   (3.OA.A.2, 3.OA.A.4))

Total Practice Points: 0

Providing two division equations in Part A, the student correctly identifies 54 as a number divisible by 2 and 3 but not divisible by 4, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). In Part A and in both halves of Part B, the student writes acceptable division equations. In Part A, the student writes two correct division equations showing a dividend (54) divided by both 2 and 3 (54 ÷ 3 = 18 and 54 ÷ 2 = 27), and no incorrect equations are given (3.OA.A.4). In Part C, the student's response ("Because two can be put in three and four") does not explain why all numbers that can be divided by both 3 and 4 can also be divided by 2 (no credit for MP7).

Total Awarded Points: 2 out of 3

Task 2. Division Task

a.   Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

The answer is ome because $3 \div 1 = 3$ ans $2 \div 1 = 2$.
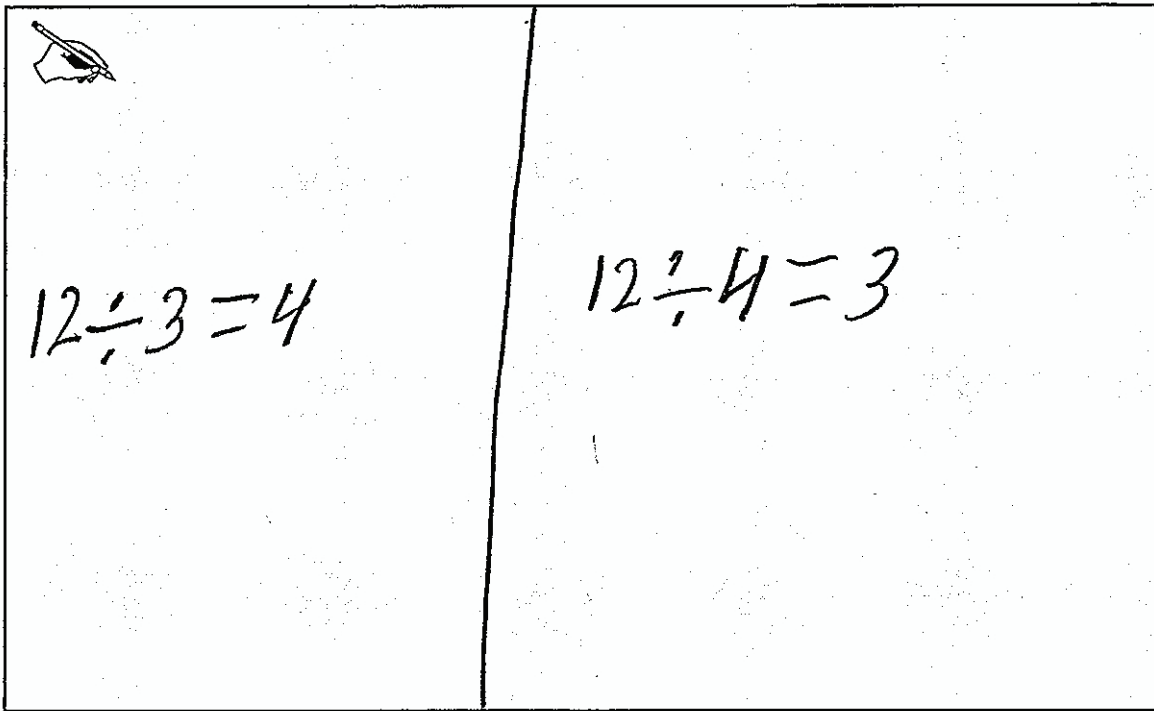
$2 \div 1 = 2$ $3 \div 1 = 3$

b.   Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

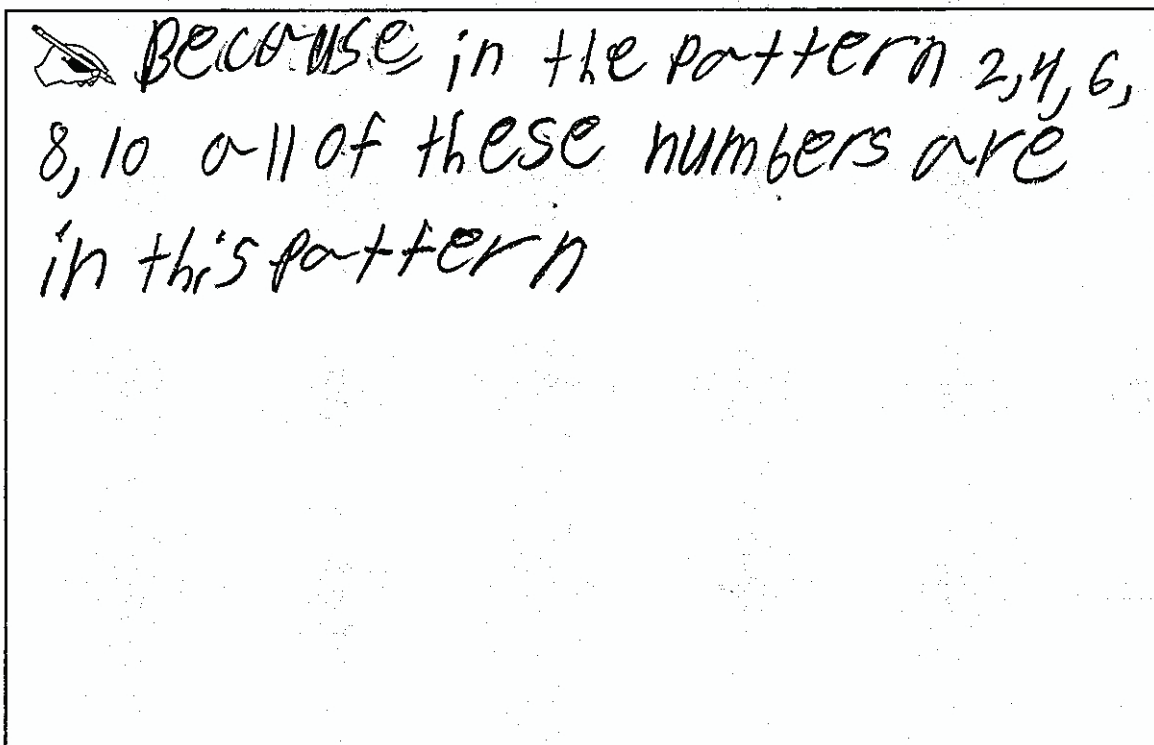$3 \div 1 = 3$ $4 \div 1 = 4$

Litho#: 368297

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$12 \div 3 = 4 \qquad 12 \div 4 = 3$$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

Because in the pattern 2,4,6, 8,10 all of these numbers are in this pattern

Anchor 5   Litho 368297

Total Content Points: 2   (3.OA.A.2, 3.OA.A.4)

Total Practice Points: 0

Although the student does not correctly answer the questions in Part A and in the first half of Part B, in the second half of Part B the student identifies a number that can be divided by 3 and 4 (12), thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). The student writes correct division equations showing a dividend (12) that can be divided by both 3 and 4 ($12 \div 3 = 4$ and $12 \div 4 = 3$) and, even though some of the division equations the student writes do not correctly respond to the task, the work shown is accurate (3.OA.A.4). In Part C, the student's response ("Because in the pattern 2, 4, 6, 8, 10, all of these numbers are in this pattern") addresses even numbers, but no specific connection is made to numbers divisible by both 3 and 4 (no credit for MP7).

Total Awarded Points: 2 out of 3

Task 2. Division Task

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

$$6 \div 3 = 2 \text{ and } 6 \div 2 = 3$$

b. Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$12 \div 3 = 4 \quad 12 \div 4 = 3$$

Litho#: 363263

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$7 \div 3 = 4 \qquad 7 \div 4 = 3$$

c.   Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

Becase $3 + 4 = 7$ and $7 \div 3 = 4$ and $3 \times 4 = 12$ so $12 \div 3 = 4$.

Anchor 6   Litho 363263

Total Content Points: 1   (3.OA.A.2)

Total Practice Points: 0

Providing two division equations in Part A, the student correctly identifies 6 as a number divisible by both 2 and 3 but not divisible by 4, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). In Part A and in the first half of Part B, the student writes correct division equations. However, in the second half of Part B, the student's equations are incorrect (7 ÷ 3 = 4 and 7 ÷ 4 = 3) (no credit for 3.OA.A.4). In Part C, the student's response ("[Because] 3 + 4 = 7 and 7 ÷ 3 = 4") shows incorrect mathematical logic and lacks a cohesive argument relating numbers divisible by 3 and 4 to those divisible by 2 (no credit for MP7).

Total Awarded Points: 1 out of 3

Task 2. Division Task

a.   Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

$$6 \div 3 = 2$$

b.   Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

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

Litho#: 367950

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$5 \div 4 = 3$$

$$5 \div 3 = 4$$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

They can't be divided with each other.

Anchor 7   Litho 367950

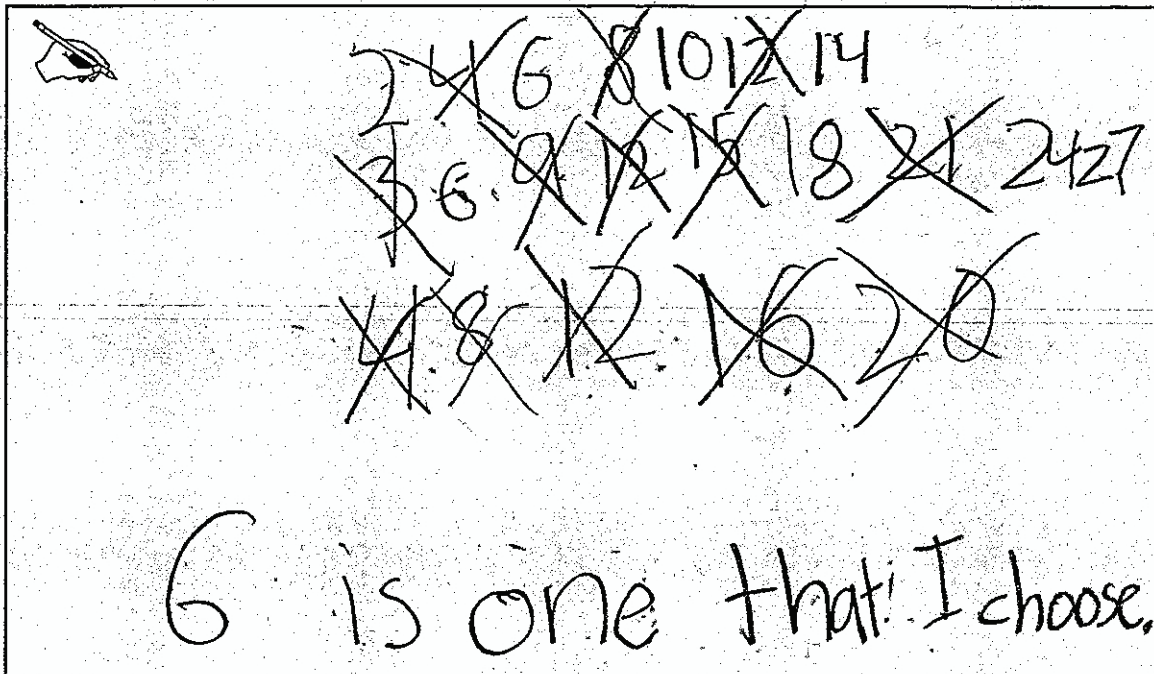Total Content Points: 1   (3.OA.A.2)

Total Practice Points: 0

In Part A, the student writes one equation (6 ÷ 3 = 2), but does not explicitly identify the 6 as the number divisible by both 2 and 3. However, in the first half of Part B, the student writes two equations identifying 12 as a number divisible by both 3 and 4, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). The equations in the second half of Part B are incorrect (5 ÷ 4 = 3 and 5 ÷ 3 = 4) (no credit for 3.OA.A.4). In Part C, the student's response ("They can't be divided with each other") neither addresses both the 3 and the 4 nor indicates that 4 is divisible by 2 and, therefore, does not explain why all numbers that can be divided by both 3 and 4 can also be divided by 2 (no credit for MP7).

Total Awarded Points: 1 out of 3

Task 2. Division Task

a.   Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.
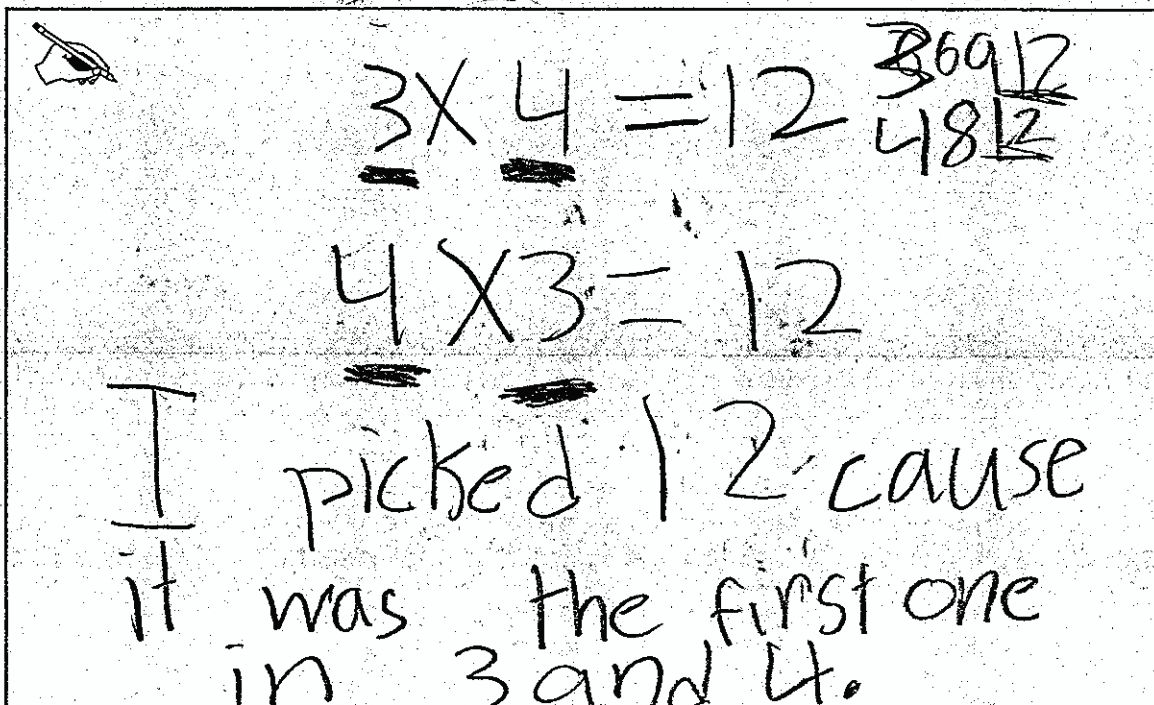
2 4 6 8 10 12 14
3 6 9 12 15 18 21 24 27
4 8 12 16 20

6 is one that I choose.

b.   Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$3 \times 4 = 12$$

3 6 9 12
4 8 12

$$4 \times 3 = 12$$

I picked 12 cause it was the first one in 3 and 4.

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

~~6~~ ~~9~~ ~~12~~ ~~15~~ 18 ~~21~~ 24

~~18~~ ~~12~~ ~~16~~ ~~20~~ 24

24 is the next to first.

$3 \times 8 = 24$

$4 \times 6 = 24$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

The ones that are 3 and 4 all end in a even number that makes them even.

Anchor 8   Litho 349132

Total Content Points: 1   (3.OA.A.2)

Total Practice Points: 0

In Part A, the student compares multiplication tables for 2, 3, and 4 to determine correctly that 6 is a number divisible by both 2 and 3 but not divisible by 4, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). In Parts A, B, and C, the student writes no division equations (no credit for 3.OA.A.4). In Part C, the student's response ("The ones that are 3 and 4 all end in a even number. That makes them even") is unclear and does not explicitly state that even numbers are divisible by 2; therefore, it does not fully explain why all numbers that can be divided by both 3 and 4 can also be divided by 2 (no credit for MP7).

Total Awarded Points: 1 out of 3

Task 2. Division Task

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

gcan be divided by 2

3 cannot be divided by 4

4 cannot be divided by 3

3 cannot be divided by 2

b. Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

3 can be divided by one

4 can be divided by one

or two

Litho#: 364546

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

> 4 can be ÷ in 2
> and 3 can be ÷ in 3

c.   Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

> because 2 + 2 = 4 so
> 4 divided by 2 = 4

Anchor 9   Litho 364546

Total Content Points: 1   (3.OA.A.2)

Total Practice Points: 0

In Parts A, B, and C, the student correctly states that 4 is divisible by 2, thereby interpreting whole-number quotients of whole numbers (3.OA.A.2). In Part C, the student's only division equation ("4 divided by 2 = 4") is incorrect (no credit for 3.OA.A.4). In Part C, the student's response ("because 2 + 2 = 4 so 4 divided by 2 = 4") does not explain why all numbers that can be divided by both 3 and 4 can also be divided by 2, as the equation 2 + 2 = 4 is not enough evidence (no credit for MP7).

Total Awarded Points: 1 out of 3

Task 2. Division Task

a.   Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.

$$6 \div 3 = 2$$
$$12 \div 2 = 6$$

b.   Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$12 \div 3 = 4$$

Litho#: 361846

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$32 \div 8 = 4$
$27 \div 9 = 3$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

Because two can divid a number to eqale. three and four.

Anchor 10   Litho 361846
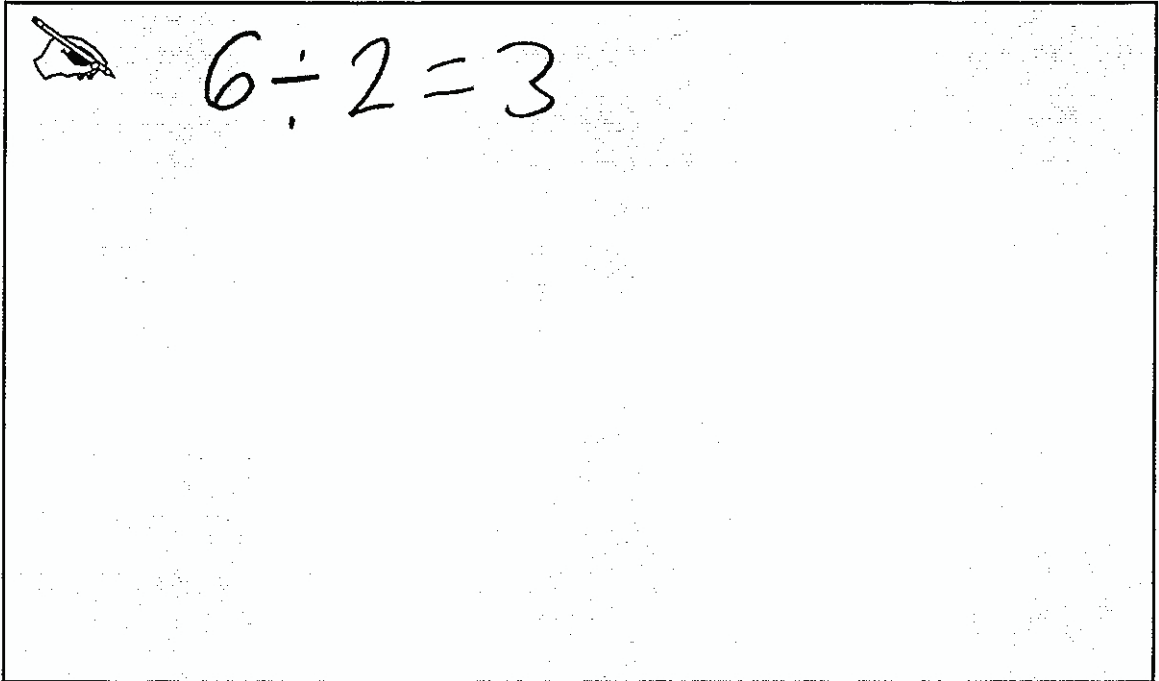
Total Content Points: 0

Total Practice Points: 0

In Part A, the student writes two equations ($6 \div 3 = 2$ and $12 \div 2 = 6$), yet does not identify a number divisible by both 2 and 3 but not divisible by 4. In Part B, the student writes three equations ($12 \div 3 = 4$, $32 \div 8 = 4$, and $27 \div 9 = 3$), but does not identify a number that can be divided by both 3 and 4 (no credit for 3.OA.A.2). Although all equations are correct, the student does not provide two equations explicitly showing a single dividend divisible by both 3 and 4, or by just 2 and 3 without being divisible by 4 (no credit for 3.OA.A.4). In Part C, the student's response ("Because two can [divide] a number to [equal] three and four") does not explain why all numbers that can be divided by both 3 and 4 can also be divided by 2 (no credit for MP7).

Total Awarded Points: 0 out of 3

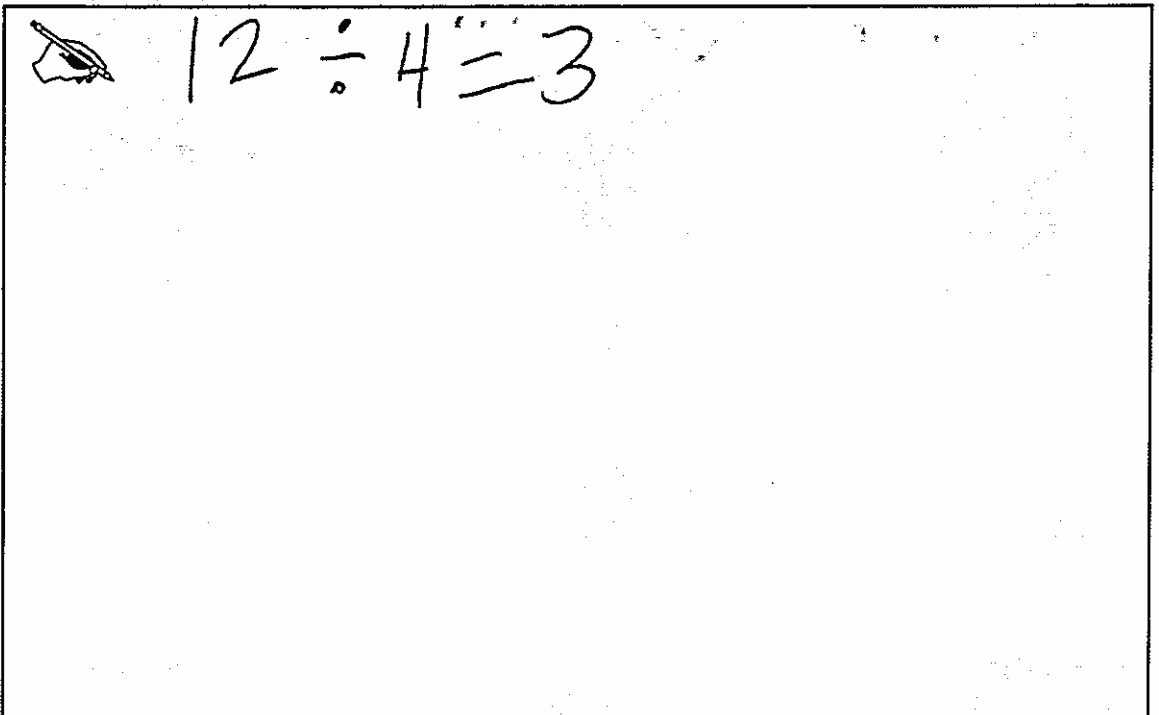**Task 2. Division Task**

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.
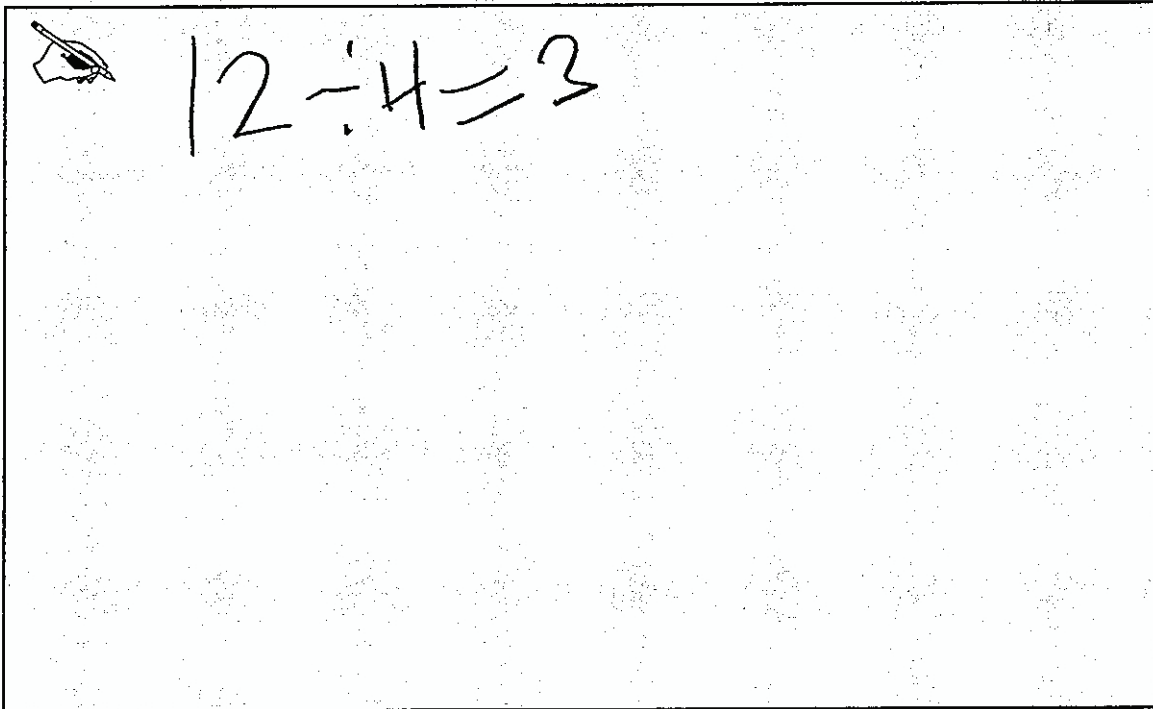
$$6 \div 2 = 3$$

b. Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.
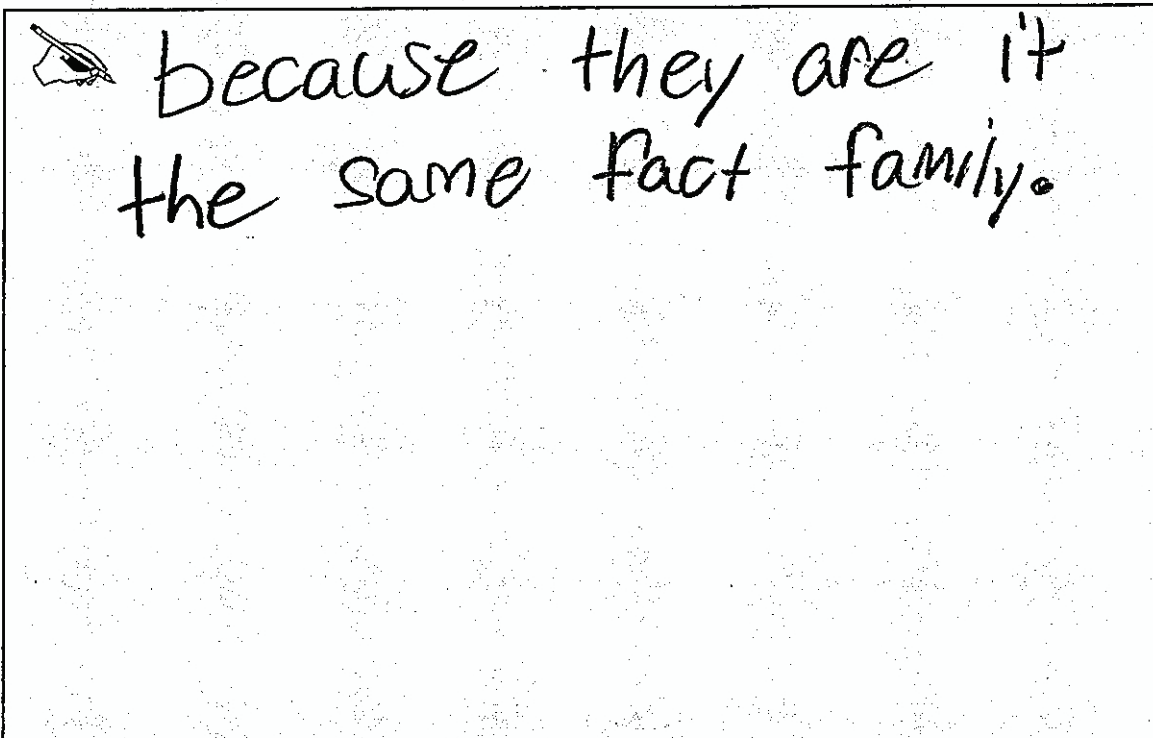
$$12 \div 4 = 3$$

Litho#: 364527

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$12 \div 4 = 3$$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

because they are it the same fact family.

Anchor 11   Litho 364527
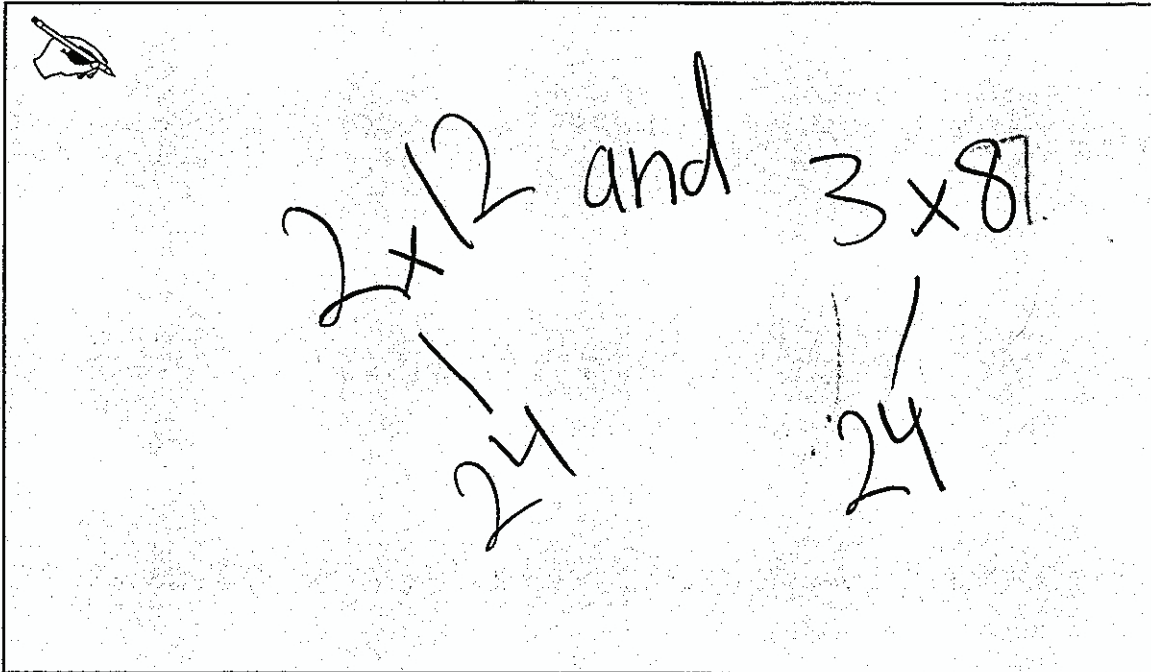
Total Content Points: 0

Total Practice Points: 0

In Part A, the student writes one equation (6 ÷ 2 = 3), but does not identify 6 as the number divisible by both 2 and 3 but not divisible by 4. In Part B, the student writes one equation (12 ÷ 4 = 3) but does not provide a second equation to identify 12 as a number divisible by 3 and 4 (no credit for 3.OA.A.2). In the second half of Part B, the student writes the same equation (12 ÷ 4 = 3) and, therefore, does not correctly address the task to provide two equations showing a different number that is divisible by both 3 and 4 (no credit for 3.OA.A.4). In Part C, the student's response ("because they are [in] the same fact family") does not specifically explain why all numbers that can be divided by both 3 and 4 can also be divided by 2 (no credit for MP7).

Total Awarded Points: 0 out of 3

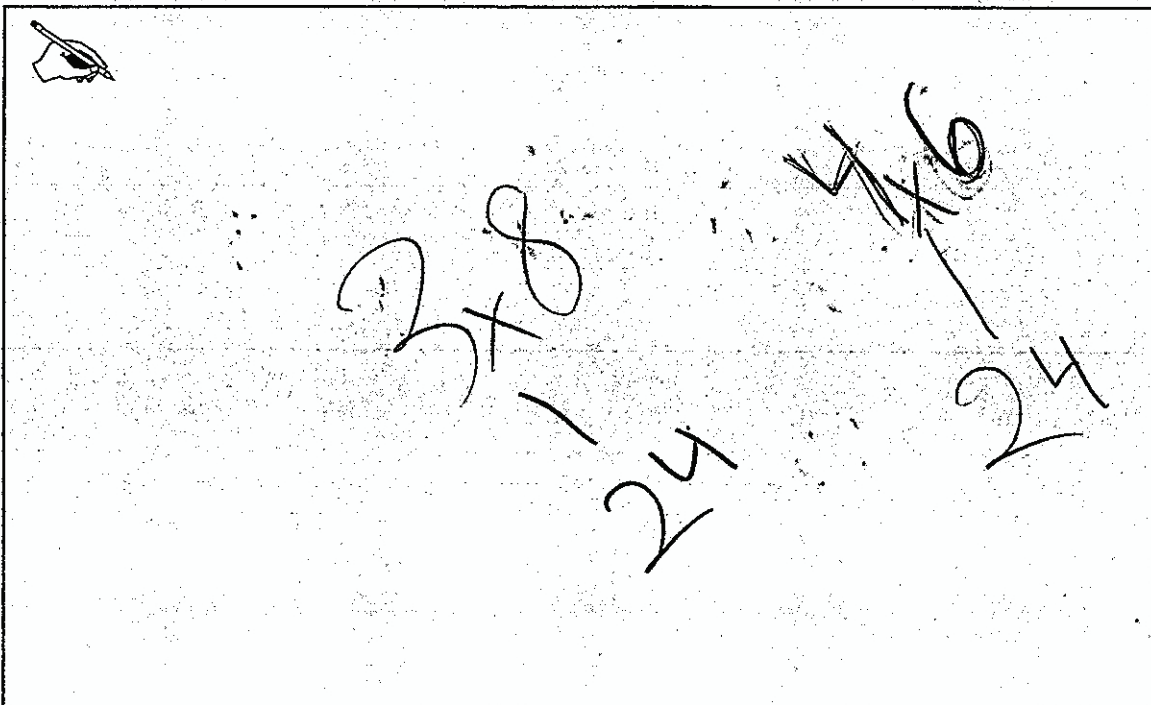**Task 2. Division Task**

a. Identify a number that can be divided by both 2 and 3 but cannot be divided by 4.
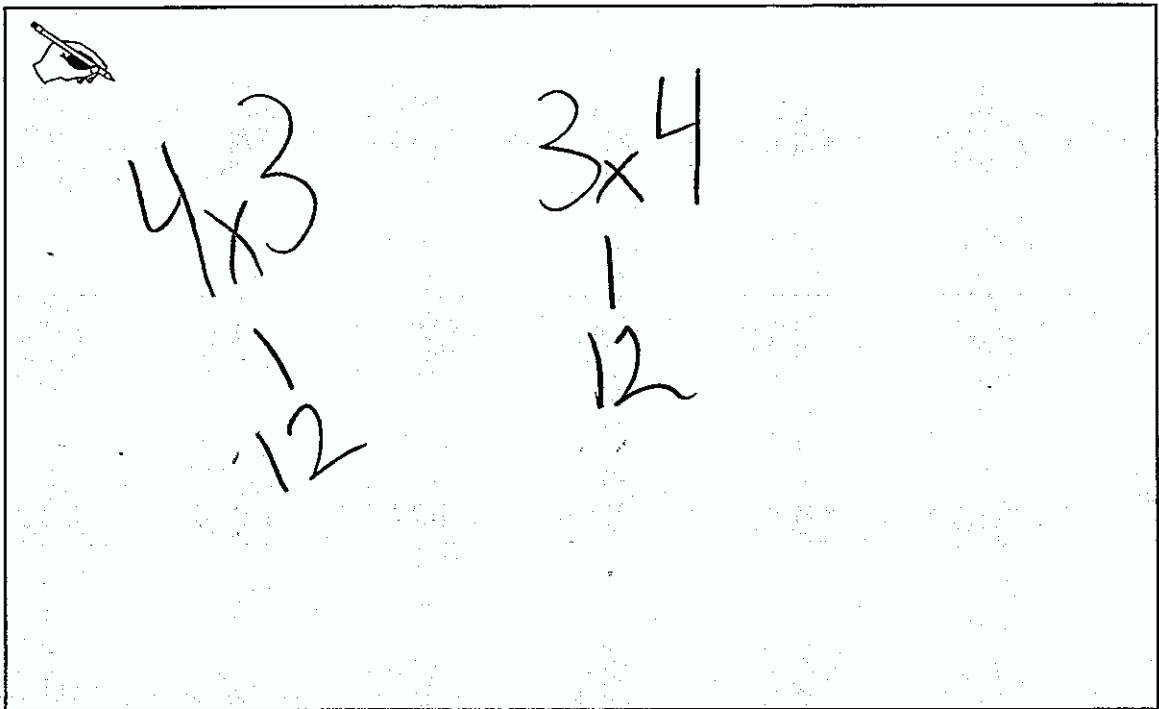
2×12 and 3×8

24 24

b. Identify a number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

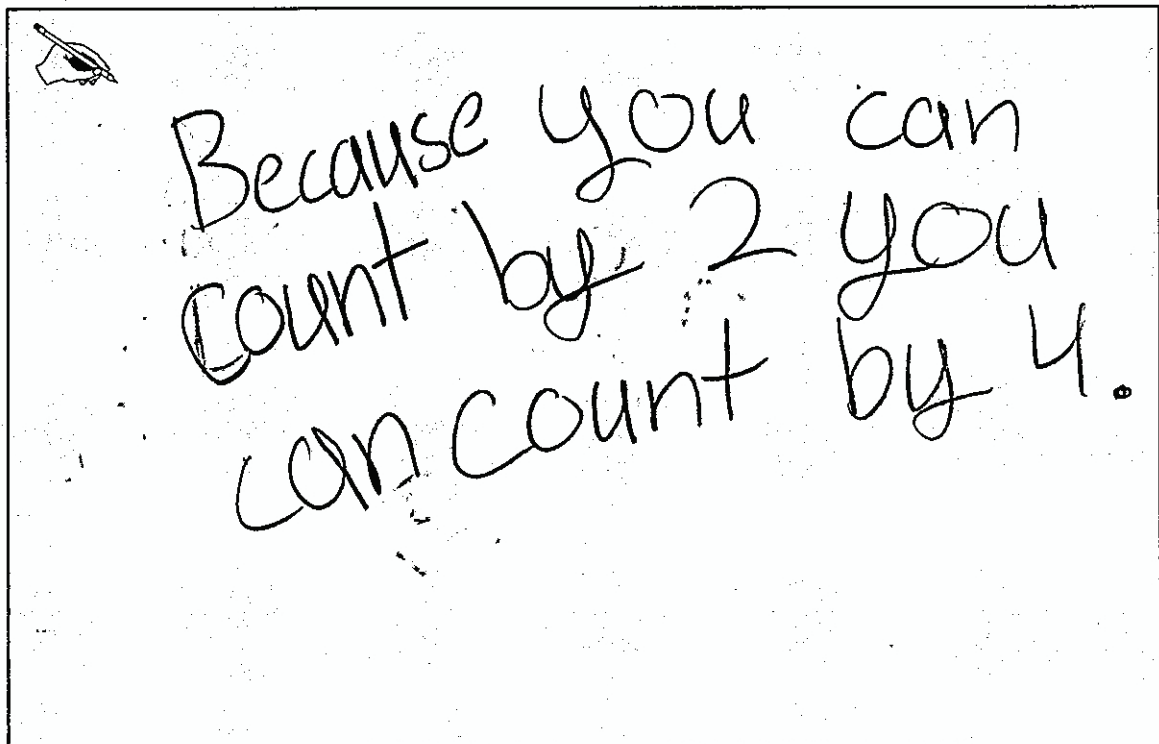3×8 4×6

24 24

Identify a *different* number that can be divided by 3 and also divided by 4. Write two division equations to show the number can be divided by 3 and also divided by 4.

$$4 \times 3$$
$$| \\ 12$$

$$3 \times 4$$
$$| \\ 12$$

c. Explain why all numbers that can be divided by both 3 and 4 can also be divided by 2.

Because you can count by 2 you can count by 4.

Anchor 12   Litho 363361

Total Content Points: 0

Total Practice Points: 0

In Part A, the student incorrectly identifies 24 as a number divisible by both 2 and 3 but not divisible by 4 (no credit for 3.OA.A.2). In the second half of Part B, the multiplication equations indicate that 3 and 4 are factors of 12, but the student fails to provide correct division equations (no credit for 3.OA.A.4). In Part C, the student's response ("Because you can count by 2 you can count by 4") does not address the 3 and, therefore, does not explain why all numbers that can be divided by both 3 and 4 can also be divided by 2 (no credit for MP7).

Total Awarded Points: 0 out of 3