Name _____   Date _____

1. Fill in the blanks to make true statements.

a. 4 groups of five = _20_
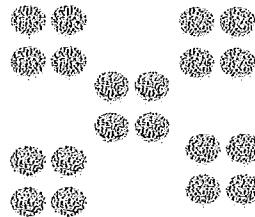
   4 fives = _20_

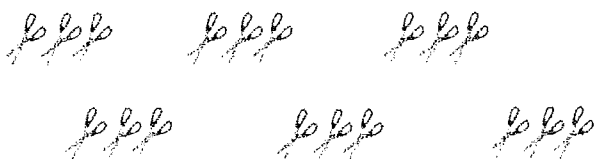   4 × 5 = _20_

b. 5 groups of four = _20_

   5 fours = _20_

   5 × 4 = _20_

c. 6 + 6 + 6 = _18_

   _3_ groups of six = _18_

   3 × _6_ = _18_

d. 3 + _3_ + _3_ + _3_ + _3_ + _3_ = _18_

   6 groups of _3_ = _18_

   6 × _3_ = _18_

COMMON CORE | Lesson 1: Understand *equal groups of* as multiplication.
Date: 5/6/13

engage^ny 1.A.12

2. The picture below shows 3 groups of hot dogs. Does the picture below show 3 × 3? Explain why or why not.

yes because there are 3 groups of 3 hotdogs

3. Draw a picture to show 4 × 2 = 8.

4. Circle the markers below to show 3 groups of 6. Write addition and multiplication sentences to represent the problem.

COMMON CORE | Lesson 1: Understand *equal groups of* as multiplication.
Date: 5/6/13

engage^{ny}   1.A.13

Name _____   Date _____

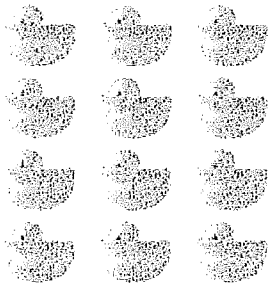Use the arrays below to answer each set of questions.

1.

a. How many rows of erasers are there? __*3*__

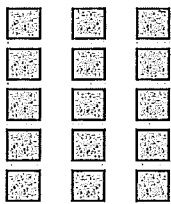b. How many erasers are there in each row? __*2*__

2.

a. What is the number of rows? __*4*__

b. What is the number of objects in each row? __*3*__

3.

a. There are 3 squares in each row. How many squares are in 5 rows? __*15*__

b. Write a multiplication fact to describe the array. *3 x 5 = 15*
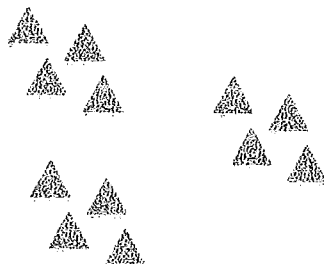
4.

a. There are 6 rows of stars. How many stars are in each row? __*4*__

b. Write a multiplication fact to describe the array. *6 x 4 = 24*

5. The triangles below show 3 groups of 4.

a. Redraw the triangles as an array that shows 3 rows of 4.

b. Compare the drawing to your array. How are they the same? How are they different?

Same - both have 12 total

Different - Different number of groups and number in each group

6. Roger has a collection of stamps. He arranges the stamps into 5 rows of 4. Draw an array to represent Roger's stamps. Then write a multiplication sentence to describe the array.
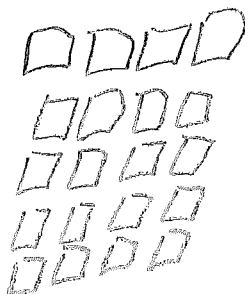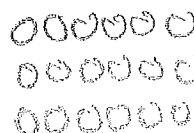
$5 \times 4 = 20$

7. Kimberly arranges her 18 markers in an array. Draw an array that Kimberly might make. Then write a multiplication sentence to match your array.
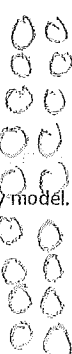
Answers may vary.
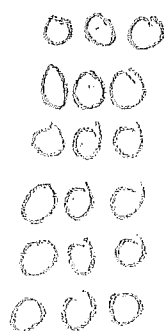
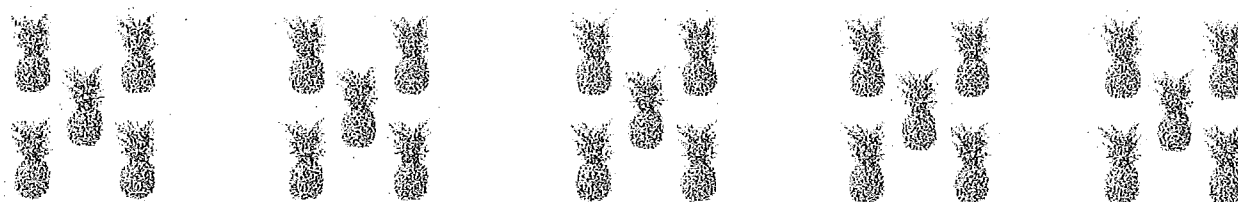$6 \times 3 = 18$

$3 \times 6 = 18$

$9 \times 2 = 18$

or array for
$2 \times 9 = 18$
or
$1 \times 18 = 18$
$18 \times 1 = 18$

Name _____   Date _____
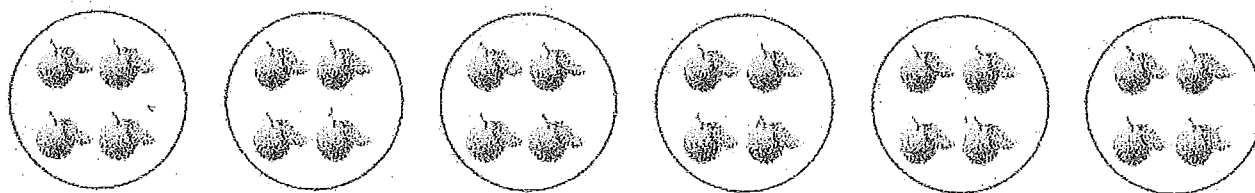
Solve problems 1–4 using the pictures for each problem.

1. There are 5 pineapples in each group. How many pineapples are there in 5 groups?

    a. Number of groups: _____5_____   Size of each group: _____5_____

    b. 5 × 5 = _____25_____

    c. There are _____25_____ pineapples altogether.

---

2. There are _____4_____ oranges in each basket. How many oranges are there in 6 baskets?

    a. Number of groups: _____6_____   Size of each group: _____4_____

    b. 6 × _____4_____ = _____24_____

    c. There are _____24_____ oranges altogether.

COMMON CORE | Lesson 3:   Interpret the meaning of factors—the size of the group or
            | the number of groups.
            | Date: 5/6/13

engage^ny   1.A.39

3. There are 4 bananas in each row. How many bananas in ___4___ rows?

   a. Number of rows: ___4___   Size of each row: ___4___

   b. ___4___ × 4 = ___16___

   c. There are ___16___ bananas altogether.

---

4. There are ___3___ peppers in each row. How many peppers are there in 6 rows?
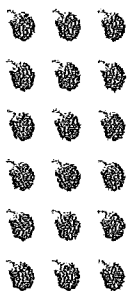
   a. Number of rows: ___6___   Size of each row: ___3___

   b. ___6___ × ___3___ = ___18___

   c. There are ___18___ peppers altogether.

---

5. Draw an array using factors 4 and 2. Then show a number bond where each part represents the amount in one row.
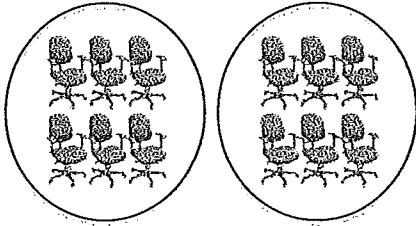
   X X
   X X
   X X
   X X
   4 X 2 = 8

   2 + 2 + 2 + 2 = 8

COMMON CORE | Lesson 3: | Interpret the meaning of factors—the size of the group or the number of groups.
Date: 5/6/13

engage^ny   1.A.40
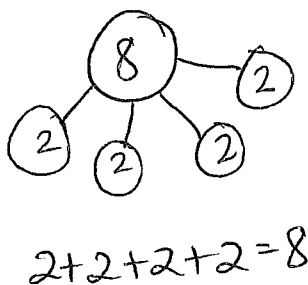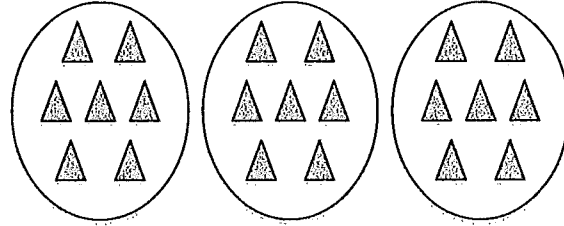
Name _____   Date _____

1.

Divide 12 chairs into 2 equal groups.

There are ___6___ chairs in each group.

2.

Divide 21 triangles into 3 equal groups.
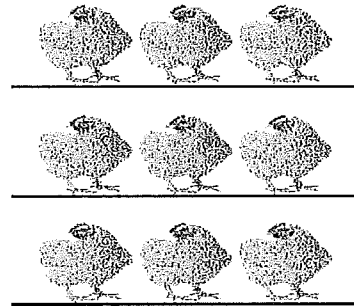
There are ___7___ triangles in each group.

3.

Divide 25 erasers into ___5___ equal groups.

There are ___5___ erasers in each group.

4.

Divide ___9___ chickens into ___3___ equal groups.

There are ___3___ chickens in each group.

$9 \div 3 = $ ___3___

5.

There are ___12___ buckets in each group.

$12 \div 4 = $ ___3___

6.

$16 \div 4 = $ ___4___

COMMON CORE | Lesson 4: Understand the meaning of the unknown as the size of the group in division.
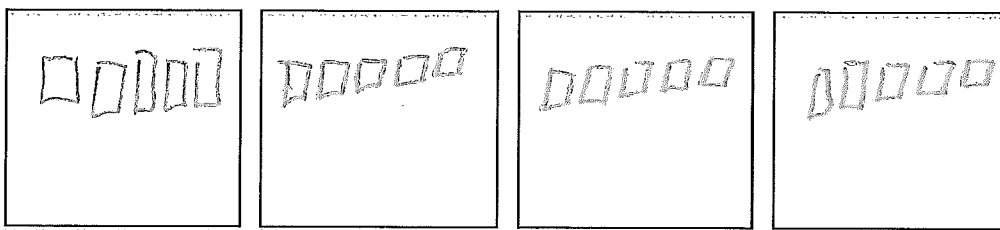
Date: 5/6/13

engage^{ny}
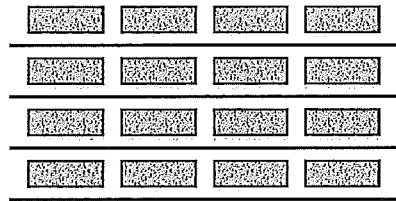
1.B.14

7. Andrew has 21 keys. He puts them in 3 equal groups. How many keys are in each group?
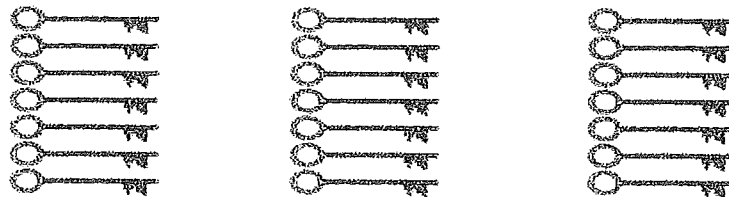
There are ___7___ keys in each group.

$21 \div 3 =$ ___7___

8. Mr. Doyle has 20 pencils. He divides them equally between 4 tables. Draw the pencils on each table.

There are ___5___ pencils on each table.

$20 \div$ ___4___ $=$ ___5___

9. Jenna has markers. The picture shows how she placed them on her desk. Write a division sentence to represent how she equally grouped her markers.

There are ___4___ markers in each row.

___20___ $\div$ ___5___ $=$ ___4___

COMMON CORE | Lesson 4: Understand the meaning of the unknown as the size of the group in division.
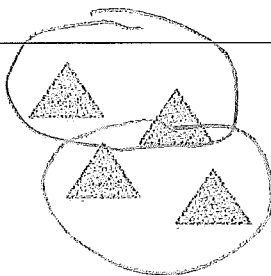Date: 5/6/13

engage^{ny}

1.B.15

Name _____   Date _____

1.

Divide 4 triangles into groups of 2.
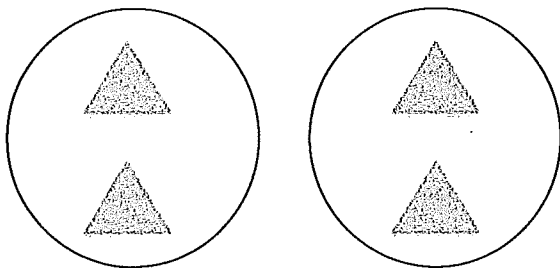
There are ___2___ groups of 2 triangles.

$4 \div 2 = 2$

2.
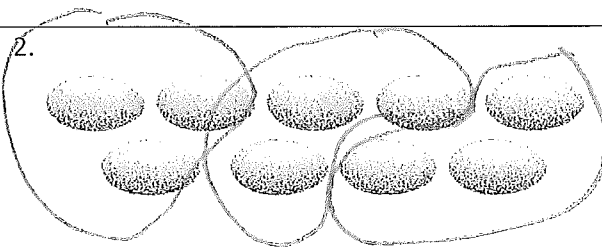
Divide 9 eggs into groups of 3.

There are ___3___ groups.

$9 \div 3 = $ ___3___

3.
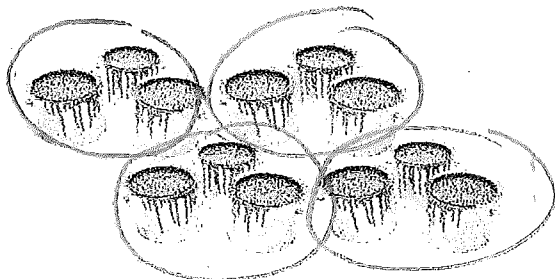
Divide 12 buckets of paint into groups of 3.

$12 \div 3 = $ ___4___

4.

Group the squares to show $15 \div 5 = $ ___3___
where the unknown represents the number of groups.

How many groups are there? ___3___

COMMON CORE | Lesson 5: | Understand the meaning of the unknown as the number of groups in division.
Date: | 5/6/13

engage^ny   1.B.24

5. Daniel has 12 apples. He puts 6 apples in each bag. Circle the apples to find the number of bags Daniel makes.
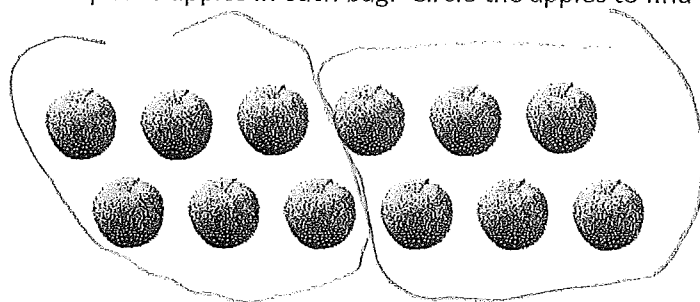
   a. Write a division sentence where the answer represents the number of Daniel's bags.
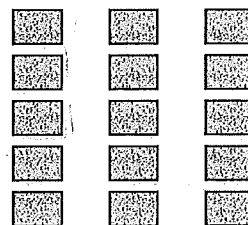
   $$12 \div 6 = 2$$

   b. Draw a number bond to show Daniel's apples.
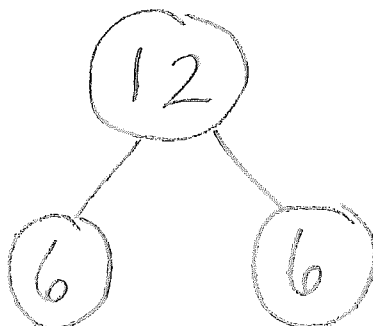
6. Jacob is drawing cats. He draws 4 legs on each cat, and a total of 24 legs.
   a. Use a count-by to find the number of cats Jacob draws. Make a drawing to match your counting.

   4   8   12   16   20   24

   1 cat →

   b. Write a division sentence to represent the problem.

   $$24 \div 6 = 4$$

COMMON CORE

Lesson 5:
Date:

Understand the meaning of the unknown as the number of groups in division.
5/6/13

engage^ny

1.B.25
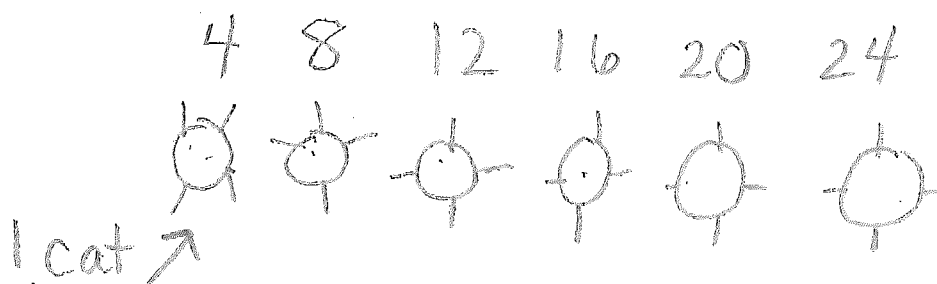
Name _____   Date _____

1. Mr. Hannigan puts 12 pencils into boxes. Each box holds 4 pencils. Circle groups of 4 to show the pencils in each box.

Mr. Hannigan needs __3__ boxes.

__3__ × 4 = 12

12 ÷ 4 = __3__

---

2. Mr. Hannigan places 12 pencils into 3 equal groups. Draw to show how many pencils are in each group.
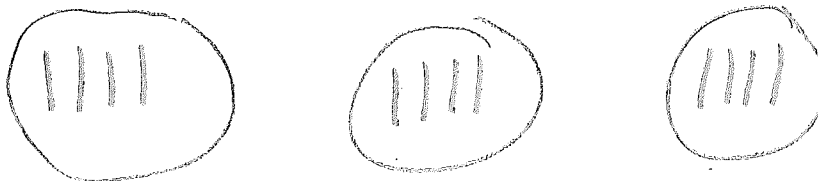
There are __4__ pencils in each group.

3 × __4__ = 12

12 ÷ 3 = __4__

---

3. Use an array to model Problem 1.

a) __3__ × 4 = 12

12 ÷ 4 = __3__

The number in the blanks represents:

how many boxes (groups) there are
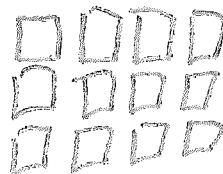
b) 3 × __4__ = 12

12 ÷ 3 = __4__

The number in the blanks represents:

how many pencils are in each group

4. Judy washes 24 dishes. She then dries and stacks the dishes equally into 4 piles. How many dishes are in each pile?

$24 \div 4 =$ __6__

$4 \times$ __6__ $= 24$

What is the meaning of the unknown factor and quotient? __how many dishes in each pile__

5. Nate solves the problem __3__ $\times 5 = 15$ by writing and solving $15 \div 5 =$ __3__. Explain why Nate's method works.

3 groups of 5 is 15.

If you divide 15 items into 5 groups, there are 3 in each group because 3 × 5 = 15.
groups of

6. The blanks in Problem 5 represent the number of groups. Draw an array to represent the number sentences.

$3 \times 5 = 15$

$5 \times 3 = 15$

COMMON CORE | Lesson 6: Interpret the unknown in division using the array model.
Date: 5/6/13

engage^ny 3.B.35
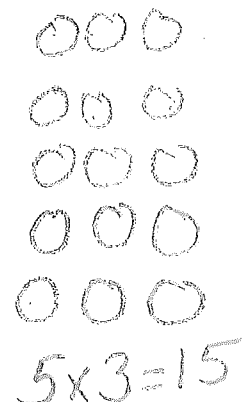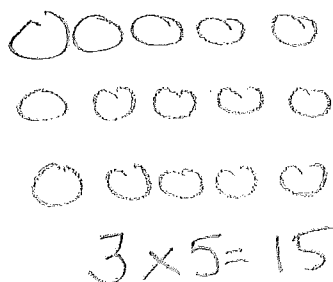
Name _____   Date _____

1. a. Count by twos 7 times.

   $\underline{2, 4, 6, 8, 10, 12, 14}$

   b. Draw an array that matches your count-by.

   c. Write a multiplication sentence that represents the total number of objects in your array.

   $\underline{7} \times \underline{2} = \underline{14}$

2. a. Count by sevens 2 times.

   $\underline{7, 14}$

   b. Draw an array that matches your count-by.

   c. Write a multiplication sentence that represents the total number of objects in your array.

   $\underline{2} \times \underline{7} = \underline{14}$

3. a. Compare your work in Problems 1 and 2. Turn your paper as you study the arrays to look at them in different ways.
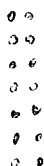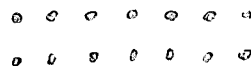
   It is the same array. The array in problem 1 just gets turned on its side in problem 2.

   b. Why are the factors in your multiplication sentences in a different order?

   Problem 1 = 7 groups of 2
   Problem 2 = 2 groups of 7

4. Count by the unit (the number in word form) the number of times indicated. Write the multiplication sentence that matches your count-by. The first one is done for you.

   a. 2 twos: $\underline{2 \times 2 = 4}$

   b. 3 twos: $\underline{3 \times 2 = 6}$

   c. 2 threes: $\underline{2 \times 3 = 6}$

   d. 2 fours: $\underline{2 \times 4 = 8}$

   e. 4 twos: $\underline{4 \times 2 = 8}$

   f. 5 twos: $\underline{5 \times 2 = 10}$

   g. 2 fives: $\underline{2 \times 5 = 10}$

   g. 6 twos: $\underline{6 \times 2 = 12}$

   h. 2 sixes: $\underline{2 \times 6 = 12}$

5. Write and solve a different multiplication sentence to describe each array.
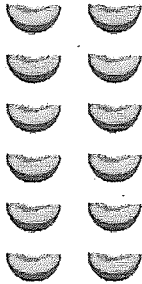
$\underline{\quad 6 \times 2 = 12 \quad}$ $\underline{\quad 2 \times 6 = 12 \quad}$

6. Angel writes $2 \times 8 = 8 \times 2$ in his notebook. Do you agree or disagree? Draw arrays to help explain your thinking.

I agree because the arrays have the same amount. Array 2 is just turned on its side.

① $\underline{2 \times 8}$

② $\underline{8 \times 2}$
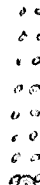
7. Find the missing factor to make each number sentence true.

$2 \times 6 = 6 \times \underline{2}$ $\underline{7} \times 2 = 2 \times 7$ $9 \times 2 = \underline{2} \times 9$ $2 \times \underline{10} = 10 \times 2$

8. Tamia buys 2 bags of candy. Each bag has 7 pieces of candy in it.
   a. Draw an array to show how many pieces of candy Tamia has altogether.
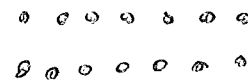
   b. Write and solve a multiplication sentence to describe the array. $2 \times 7 = 14$

   c. Use the commutative property to write and solve a different multiplication sentence for the array.

   $7 \times 2 = 14$

COMMON CORE | Lesson 7: Demonstrate the commutativity of multiplication and practice related facts by skip-counting objects in array models.

Date: 6/26/13

engage^{ny}   1.C.13

Name _____   Date _____

1. a. Count by threes 6 times.

   $\underline{3, 6, 9, 12, 15, 18}$

   b. Draw an array that matches your count-by.

2. a. Count by sixes 3 times.

   $\underline{6, 12, 18}$

   b. Draw an array that matches your count-by.

2. Write multiplication expressions below to represent your arrays in Problems 1 and 2. Use the commutative property to make the equation true.

$$\underline{6} \times \underline{3} = \underline{3} \times \underline{6}$$

   Problem 1   Problem 2

3. Count by the unit (the number in word form) the number of times indicated. Write the multiplication sentence that matches your count by. The first one is done for you.

   a. 5 threes: __5 × 3 = 15__
   b. 3 fives: __3×5 = 15__
   c. 6 threes: __6×3 = 18__

   d. 3 sixes: __3×6 = 18__
   e. 7 threes: __7×3 = 21__
   f. 3 sevens: __3×7 = 21__

   g. 8 threes: __8×3 = 24__
   h. 3 nines: __3×9 = 27__
   I. 10 threes: __10×3 = 30__

4. Find the unknowns that make the number sentences true. Then draw a line between related facts.

   a. 3 + 3 + 3 + 3 + 3 + 3 = __18__

   b. 3 × 5 = __15__

   c. 8 threes + 1 three = __27__

   d. 3 × 9 = __27__

   e. __18__ = 6 × 3

   f. 15 = 5 × __3__

COMMON CORE   Lesson 8:   Demonstrate the commutativity of multiplication and practice related facts by skip-counting objects in array models.
Date: 6/26/13   engage^ny   1.C.23

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5. Fernando puts 3 pictures on each page of his photo album. He puts pictures on 8 pages.

a. Use circles to draw an array that represents the total number of pictures in Fernando's photo album.

```
O  O O
O O O
O O O
O O O
O O O
O O O
O O O
O O O
X X X
X  X X
```
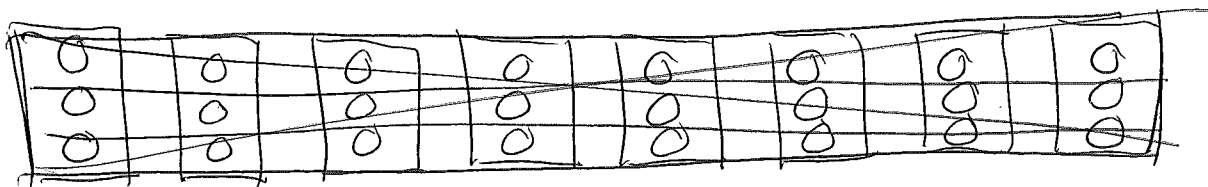
b. Use your array to write and solve a multiplication sentence to find Fernando's total number of pictures.

$8 \times 3 = 24$ Fernando puts a total number of 24 pictures on the 8 pages.

c. Fernando adds 2 more pages to his book. He puts 3 pictures on each new page. Draw x's to show the new pictures on the array in Part A.

d. Write and solve a multiplication sentence to find the new total number of pictures in Fernando's album.

$10 \times 3 = 30$ He puts 30 pictures in all on the 10 pages.

6. Ivania recycles. She gets 3 cents for every can she recycles.

a. How much money does Ivania make if she recycles 4 cans?

$\underline{4} \times \underline{3¢} = \underline{12}$ cents

b. How much money does she make if she recycles 7 cans?

$\underline{7} \times \underline{3¢} = \underline{21}$ cents

Name _____ Date _____

1. Dan organizes his star stickers into 3 rows of 4. Irene adds 2 more rows of stickers. Complete the number sentences to describe the total number of stickers in the array.

a. $(4 + 4 + 4) + (4 + 4) =$ ___20___ [with handwritten 12 above first group, 8 above second group]

b. 3 fours + __2__ fours = ___5___ fours

c. ___5___ × 4 = ___20___

[Handwritten cloud note: "This is printed incorrectly. Please change!"]

2. $7 \times 2 =$ __14__

$6 \times 2 =$ __12__

$1 \times 2 =$ __2__

$12 + 2 =$ ___14___

___7___ $\times 2 = 14$

3. $9 \times 3 =$ __27__

$10 \times 3 =$ __30__

$1 \times 3 =$ __3__
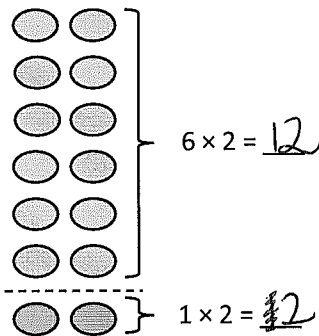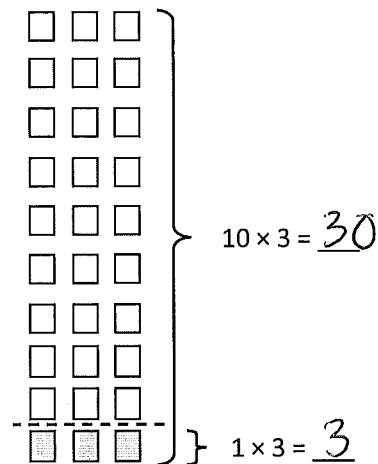
$30 -$ __3__ $= 27$

__9__ $\times 3 = 27$

4. Franklin collects stickers. He organizes his stickers in 5 rows of 4 on his table.

    Draw an array that represents Franklin's stickers using an x to show each sticker.

    O O O O $5 \times 4 =$ __20__
    O O O O
    X X X X

    x X X X

    x X X X

    X X X X
    X X X X

5. Franklin adds 2 more rows. Use circles to show his new stickers on the array in part 3a.

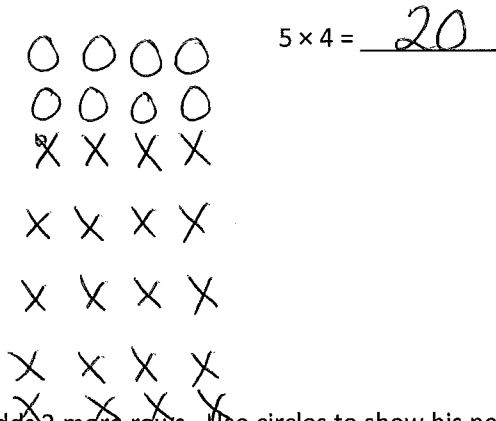   a. Write and solve a multiplication sentence to represent the circles you added to the array.

        $\underline{2} \times 4 = \underline{8}$

    b. Complete the addition sentence to show how you added the totals of 2 multiplication facts to find Franklin's total number of stickers.

        $\underline{20} + \underline{8} = 28$

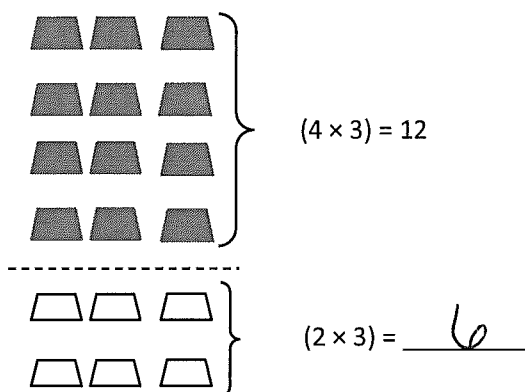   c. Complete the unknown to show Franklin's total number of stickers.
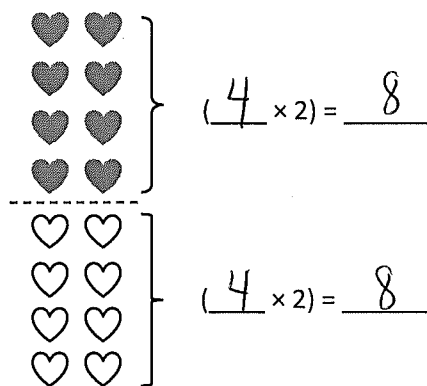
        $\underline{7} \times 4 = 28$

COMMON CORE   Lesson 9:   Find related multiplication facts by adding and subtracting equal groups in array models.   engage^ny   1.C.35

Date: 6/26/13

Name _____   Date _____

1. $6 \times 3 =$ ___18___

$(4 \times 3) = 12$

$(2 \times 3) =$ ___6___

$12 +$ ___6___ $=$ ___18___

$6 \times 3 =$ ___18___

2. $8 \times 2 =$ ___16___

$($ ___4___ $\times 2) =$ ___8___

$($ ___4___ $\times 2) =$ ___8___

$(4 \times 2) + (4 \times 2) =$ ___8___ $+$ ___8___

___8___ $\times 2 =$ ___16___

COMMON CORE | Lesson 10: | Model the distributive property with arrays to decompose units as a strategy to multiply.   engage^ny   1.C.42

Date: | 6/26/13

3. Adriana is organizing her books on shelves. She puts 3 books in each row.

    a. Use the multiplication sentences on the right to draw arrays to show the books on Adriana's top and bottom shelves.

$$\underline{\quad 5 \quad} \times 3 = 15$$

$$\underline{\quad 1 \quad} \times 3 = 3$$
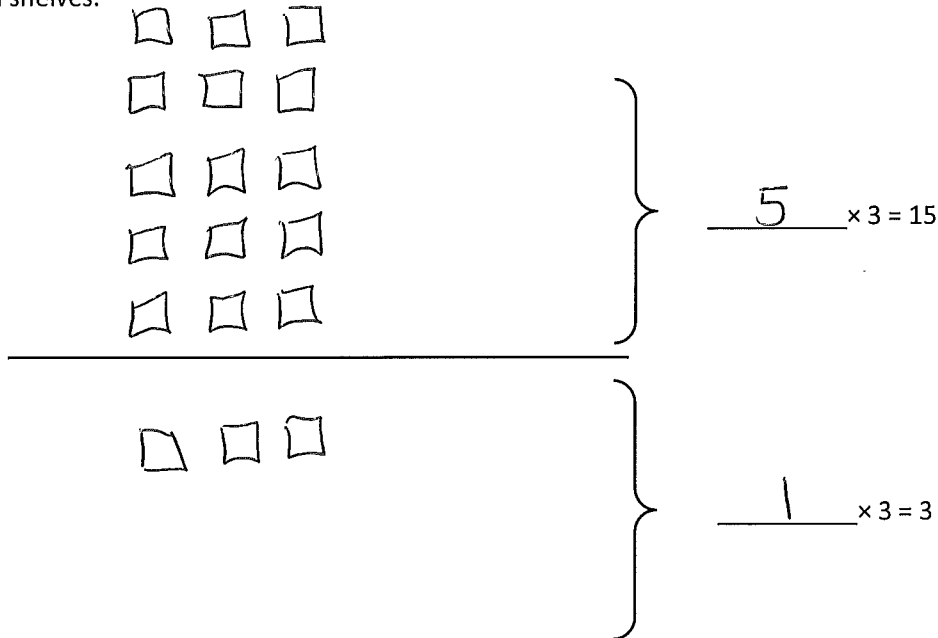
    b. Adriana calculates the total number of books as shown below. Use the array you drew to help explain her calculation.

    $$6 \times 3 = 15 + 3 = 18$$

    The whole array shows 6 rows times 3 columns, So, 6×3. This was broken into two smaller facts: 5×3 =13 and 1×3=3. So we did 15+3 because 6×3 = 15+3. Then 6×3=18 and 15+3 = 18.

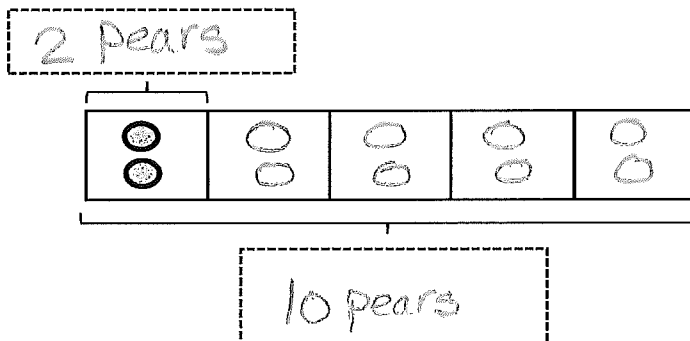 $$6 \times 3 = 15 + 3 = 18$$

Name _____   Date _____

1. Fred has 10 pears. He puts 2 pears in each basket.

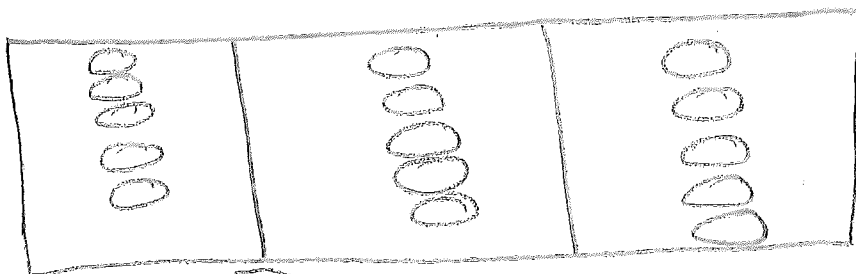   a. Draw an array where each column represents a basket of pears.

   $\underline{10} \div 2 = \underline{5}$

   b. Redraw the pears in each basket as a unit in the tape diagram. Label the diagram with known and unknown information from the problem.
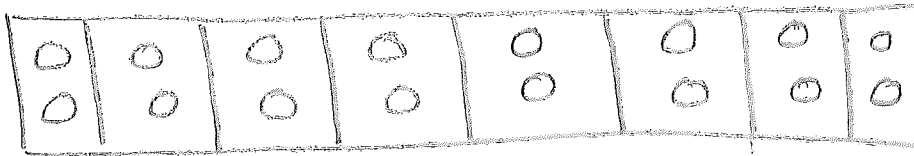

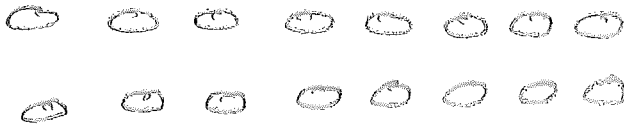2. Ms. Meyer organizes 15 clipboards equally into 3 boxes. How many clipboards are in each box? Model the problem with both an array and a labeled tape diagram. Show each column as the number of clipboards in each box.


   There are ___5___ clipboards in each box.

COMMON CORE | Lesson 11: Model division as the unknown factor in multiplication using arrays and tape diagrams.
Date: 5/6/13

engage^ny   1.D.12

3. Sixteen action figures are arranged equally on 2 shelves. How many action figures are on each shelf? Model the problem with both an array and a labeled tape diagram. Show each column as the number of action figures on each shelf.

4. Jasmine puts 18 hats away. She puts an equal number of hats on 3 shelves. How many hats are on each shelf? Model the problem with both an array and a labeled tape diagram. Show each column as the number of hats on each shelf.
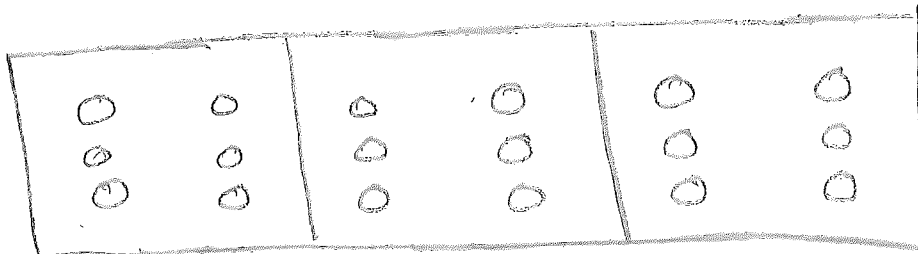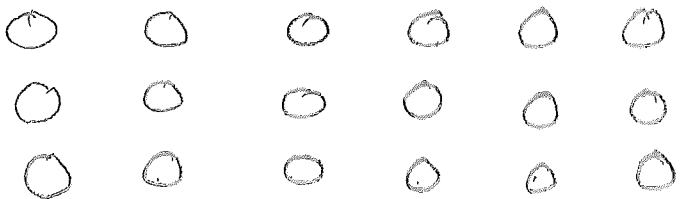
18 hats
3 shelves

5. Corey checks out 2 books a week from the library. How many weeks will it take him to check out a total of 14 books?


14 books
2 a week

$14 \div 2 = 7$

This will take __7__ weeks

COMMON CORE | Lesson 11: | Model division as the unknown factor in multiplication using arrays and tape diagrams.
Date: | 5/6/13

engage^ny | 1.D.13

4. Betsy pours 16 cups of water to equally fill 2 bottles. How many cups of water are in each bottle? Label the tape diagram to represent the problem, including the unknown.

? how many cups = 8

2 bottles divided into which equals 16 cups
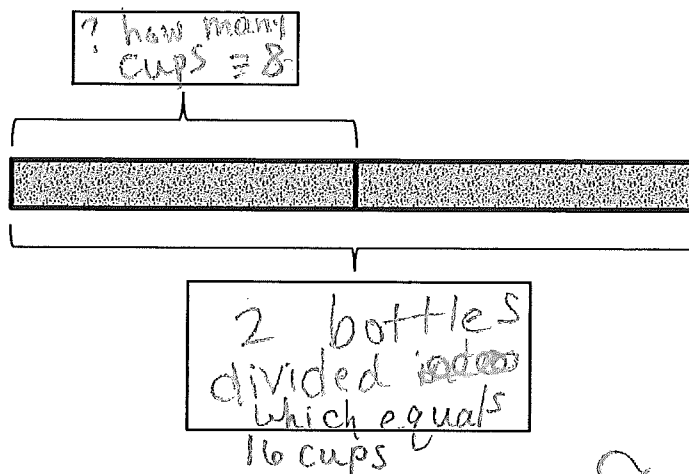
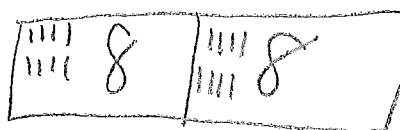There are _____8_____ cups of water in each bottle.

---

5. An earthworm tunnels 2 cm into the ground each day. The earthworm tunnels at about the same pace every day. How many days will it take the earthworm to tunnel 14 cm?

7 days

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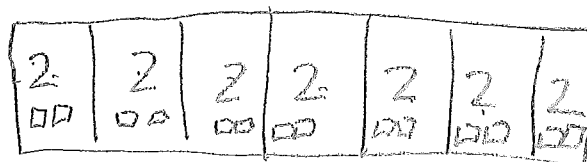
6. Sebastian and Teshawn go to the movies. The tickets cost $16 in total. The boys share the cost equally. How much does Teshawn pay?

$ 8.⁰⁰

COMMON CORE | Lesson 12: Interpret the quotient as the number of groups or the number of objects in each group using units of 2.

Date: 5/6/13

engage^ny 1.D.25

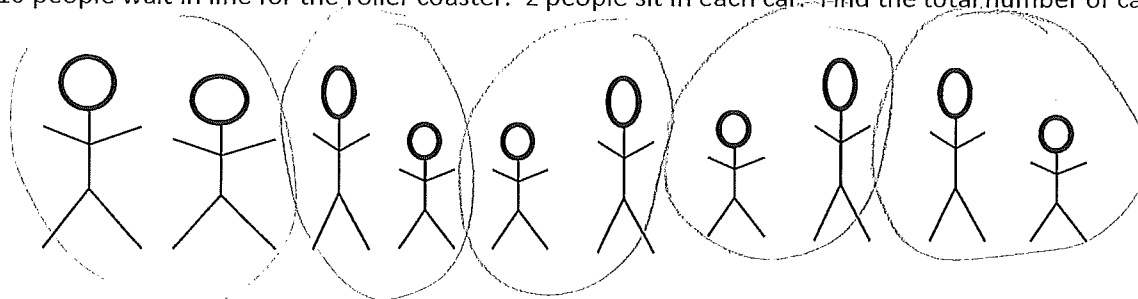© 2012 Common Core, Inc. All rights reserved. commoncore.org
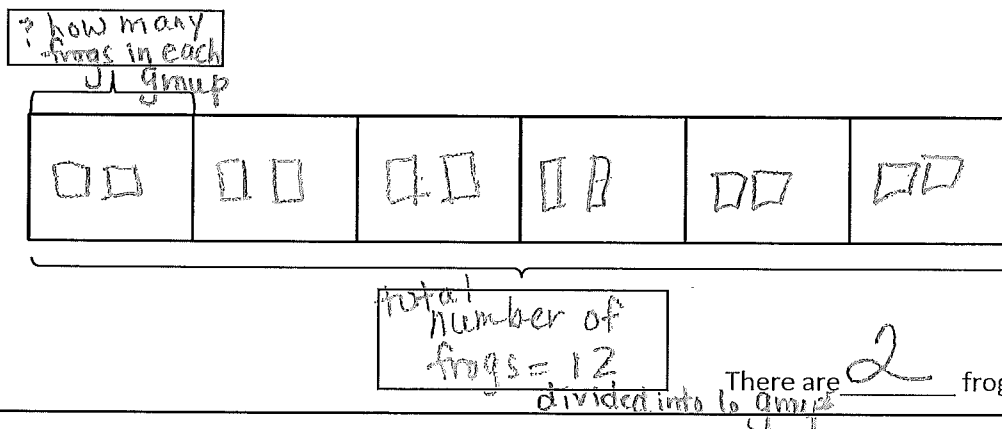
Name _____   Date _____

1. 10 people wait in line for the roller coaster. 2 people sit in each car. Find the total number of cars needed.

$10 \div 2 =$ _____ 5

There are _____ 5 cars needed.

2. Mr. Ramirez divides 12 frogs equally into 6 groups for students to study. How many frogs are in each group?
    Label known and unknown information on the tape diagram to help you solve.

? how many frogs in each group

total number of frogs = 12 divided into 6 group

There are _____ 2 frogs in each group.

3. Match.

$10 \div 2$ $16 \div 2$ $18 \div 2$ $14 \div 2$

8   7   5   9

COMMON CORE | Lesson 12: Interpret the quotient as the number of groups or the number of objects in each group using units of 2.
Date: 5/6/13

engage^ny   1.D.24

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