

1.OA Fact Families with Pictures

Task

Write as many equations for each picture as you can.

a. Use the numbers 4, 1, and 5.



Here are some equations for this picture.

$$4 + 1 = 5$$

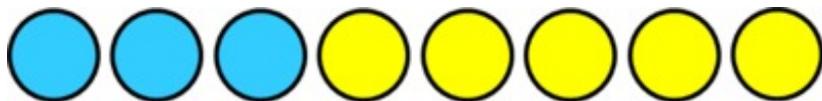
$$5 = 4 + 1$$

$$5 - 1 = 4$$

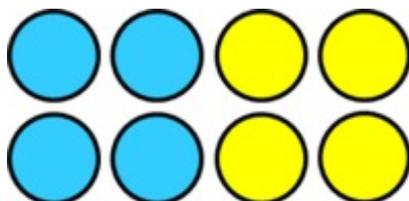
$$4 = 5 - 1$$

Can you find more equations?

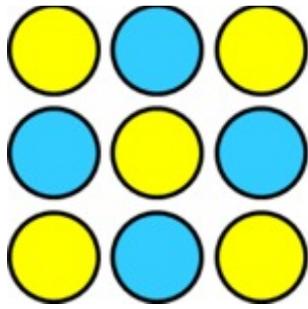
b. Use the numbers 3, 5, and 8.



c. Use the numbers 4, 4, and 8.



d. Use the numbers 4, 5, and 9.



e. Draw your own picture and write all the equations you can think of to describe it.

IM Commentary

The purpose of this task is for students to reinforce students' understanding of "fact families." Fact families reinforce the commutative property of addition and using the relationship between addition and subtraction (1.OA.B). Working with fact families is a common activity, although often times students are asked only to work with symbols. Also, the scaffolding for these tasks often only supports students in writing four of the eight possible facts in a family; this task purposefully scaffolds them to write all eight. In addition, this task includes a picture to anchor each fact-family; students can graduate from here to a symbols-only version of this task; see, for example, [1.OA Fact Families](#) . A good task to do before this one is [1.OA Domino Addition](#) .

Each of the sets of numbers and pictures for this task were chosen with a specific purpose in mind. The first two were meant to be straight-forward representations of the numbers; the circles are placed in a line in anticipation of students' work with tape diagrams and number lines in later grades. In part (c), the total number of circles was chosen so to be the same as part (b) and also so that the addends are the same, so there will be fewer distinct equations. The picture was drawn to make it easy to see the total number of each color of circle and the fact that the number of blue circles equals the number of yellow circles. The picture in part (d) used easily recognizable dot patterns but includes the twist that they are interwoven.

Creating the addition equations is easier for most students. When observing the subtraction equations the students create, one can determine their depth of understanding by noting whether or not the students use the minuend to begin the equation or the subtrahend; students may need some help understanding the appropriate order.

A possible extension to challenge advanced students would be to give students two

numbers (i.e. 7 and 4) and ask them to find a third number that will form a fact family; here the student might add either 3 or 11. The student should then write the corresponding equations.

Solution

a.

$$4 + 1 = 5 \qquad 5 = 4 + 1$$

$$1 + 4 = 5 \qquad 5 = 1 + 4$$

$$5 - 4 = 1 \qquad 1 = 5 - 4$$

$$5 - 1 = 4 \qquad 4 = 5 - 1$$

b.

$$3 + 5 = 8 \qquad 8 = 3 + 5$$

$$5 + 3 = 8 \qquad 8 = 5 + 3$$

$$8 - 3 = 5 \qquad 5 = 8 - 3$$

$$8 - 5 = 3 \qquad 3 = 8 - 5$$

c.

$$4 + 4 = 8 \qquad 8 = 4 + 4$$

$$8 - 4 = 4 \qquad 4 = 8 - 4$$

d. $4 + 5 = 9 \qquad 9 = 4 + 5$

$$5 + 4 = 9 \qquad 9 = 5 + 4$$

$$9 - 4 = 5 \qquad 5 = 9 - 4$$

$$9 - 5 = 4 \qquad 4 = 9 - 5$$



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