## Measure Lengths with Objects

Video Problem
See Video



Materials

- Color Tiles (12 per pair)

(II) : Ask questions below


## Ask Questions

- What did you notice?

I noticed a straw and a fork. Someone is trying to measure them.

- What do you wonder?

How much longer is the straw than the fork?

- What information do you need to solve the problem?

I need to know how long each object is by using the same size paper clips, with no gaps or overlaps.

## Get Hands-On

- Pass out the Color Tiles (12 per pair).

■ Have students create a model of the problem using the Color Tiles to help solve the problem.


## Solve and Share

## SAMPLE STRATEGY



I know the straw is 7 paper clips long and the fork is 5 paper clips long. I made a set of 7 Color Tiles and put a set of 5 below them. The difference between the fork and the straw is 2 Color Tiles, or 2 paper clips. So, 7-5 5 . 2 .

## SAMPLE

STRATEGY 2


I used 5 Color Tiles to make a model for the fork and added on Color Tiles until I got to 7 to represent the straw. The fork is 2 Color Tiles, or 2 paper clips, shorter than the straw: $5+2=7$.

## SAMPLE <br> StRATEGY 3



I started with 7 Color Tiles to show the length of the straw. Then I removed 5 Color Tiles to represent the length of the fork. The straw is 2 Color Tiles, or paper clips, longer than the fork: 7-5 = 2 .

## Discuss the Strategies

## Day

- What do the Color Tiles represent in the problem?
The Color Tiles represent the length of each object in paper clips to compare the lengths of the straw and the fork.
■ Why is it helpful to use Color Tiles to model the problem? The lengths of the straw and fork can be represented with the Color Tiles. The objects can be compared to see which object is longer and by how many units.


## Look Out!

- For students struggling to model the problem:
Guide students through the steps of a solution as they model it.
- For students finding an incorrect solution:
Have students explain the steps they took to find the solution. Clarify steps as needed.


## Measure Lengths with Objects

## Multi-Solution Problem

Daniel's math book was 9 jumbo paper clips long. His reading book was more than 6 but less than 10 jumbo paper clips long. How long could both books be?

## Materials

- Color Tiles (18 per pair)



## Ask Questions

Who or what is the problem about?
The problem is about Daniel and measuring 2 books.

- What are you looking for?

How long could both books be?

- What information do you need to solve this problem?

Daniel's math book was 9 jumbo paper clips long. His reading book was more than 6 but less than 10 jumbo paper clips long.

## Get Hands-On

■ Pass out the Color Tiles (18 per pair).
■ Have students create a model of the problem using the Color Tiles to help solve the problem.


## Solve and Share

SAMPLE
SOLUTION 1


I thought Daniel's reading book was 9 paper clips long. I know 9 and 9 are doubles, so both books could be 18 paper clips long: $9+9=18$.

SAMPLE
SOLUTION 2


I thought Daniel's reading book could be 8 paper clips long. I set out 8 Color Tiles to represent his reading book and 9 Color Tiles to represent his math book. I know $8+8=16$, so 1 more is 17. Both books could be 17 paper clips long. So, $8+9=(8+8)+1=17$.

SAMPLE
SOLUTION 3


I thought Daniel's reading book could be 7 paper clips long. His math book was 9 paper clips long. I thought of 7 as 6 and 1. Then I moved the 1 to make a ten with the 9. The length of both books could be 16 paper clips long. So, $7+9=$ $6+(1+9)=6+10=16$.

## Discuss the Solutions

## Day

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- How are the strategies similar? How are they different?
In Strategies 1 and 2, the Use a Double strategy is utilized. In Strategy 3, the Get to strategy was used to make addition easier.
- Why are many answers possible for the length of both books?
There are many answers possible because the problem didn't give us an exact number. The total length of the books could be at most 18 and at least 16 .


## Look Out!

■ For students who need a starting point: Ask who or what is the problem about and what they are looking for to solve the problem.
$\square$ For students struggling to add the lengths of both books:
Try having students count on or count all.

## Measure Lengths with Objects

## Numberless Problem

Chase measured 2 pieces of paper. One piece of paper was (some) Color Tiles long. The other piece of paper was (some) Color Tiles long.

## Materials

- Color Tiles (20 per pair)


## Ask Questions

- What are you picturing in your mind?

I am picturing Chase and 2 pieces of paper of different lengths.
Fill in the blanks in the problem with 12 and 9 . Now, ask these questions:
What changed?
I now know one piece of paper was 12 Color Tiles long. The other piece of paper was 9 Color Tiles Long.
What question could we ask about this situation?
What is the difference in length of the 2 pieces of paper?

## Get Hands-On

- Pass out the Color Tiles (20 per pair).
- Have students create a model of the problem using the Color Tiles to help solve the problem.
 STRATEGIES


## Solve and Share



I knew the longer piece of paper was 12 Color Tiles long, so I made a train of 9 Color Tiles and counted on to 12. I needed 3 more Color Tiles, so the difference in length was 3. Then, $9+3=12$.

## SAMPLE <br> STRATEGY 2



I made a train of 12 Color Tiles and a line of 9 Color Tiles. I compared the lengths of the lines and found a difference of 3 Color Tiles. So, 12-9 = 3 .


There is a difference of 3 Color Tiles. I made a train of 12 Color Tiles. I used a Get to 10 strategy. I know 12-2 = 10, and 1 less than 10 is 9, so the difference in length was 3: 12-3=9.

## Discuss the Strategies

- How can the Color Tiles be used to model the problem?
The Color Tiles can be used to model the length of each piece of paper and then compare the lengths to find the difference.
- How is Strategy 1 different from the other strategies?
Strategy 1 used counting on to find the difference in lengths of the 2 pieces of paper. Strategies 2 and 3 used subtraction. The second strategy made 2 trains of tiles to compare the lengths of the paper and find the difference. The third strategy used Get to 10.


## Look Out!

- For students finding an incorrect difference in length:
Have students explain the steps they took to find their solutions. Clarify steps as needed.


## Measure Lengths with Objects

## Single Solution Problem

Bree measured her father's hand with Color Tiles and found that it was 12 tiles long. Then she measured her brother's hand. It was 5 tiles long. How much longer is her father's hand than her brother's hand?

## Materials

- Color Tiles
(15 per pair)



## Ask Questions

Who or what is the problem about?
The problem is about Bree's father and brother and the length of their hands.
What are you looking for?
How much longer is Bree's father's hand than her brother's hand?

- What information do you need to solve this problem?

Bree measured her father's hand with Color Tiles and found that it was 12 tiles long, and her brother's hand was 5 tiles long.

## Get Hands-On

- Pass out the Color Tiles (15 per pair).
- Have students create a model of the problem using
 the Color Tiles to help solve the problem.


## Solve and Share



Bree's father's hand is 7 Color Tiles longer. I made a line of 5 tiles to represent the length of Bree's brother's hand. Then I made a line of 12 tiles to represent her father's hand. I started with 5. If I doubled her brother's hand it would be $5+5=10$, so 2 more is $12: 5+7=5+5+2=12$.

## SAMPLE

STRATEGY 2


Bree's father's hand is 7 Color Tiles longer. The length of Bree's father's hand is 12, which is a double of 6 and 6.1 took 6 and 1 more away to get to 5. So, 12-7=12-6-1=5.

## SAMPLE STRATEGY 3



Bree's father's hand is 7 Color Tiles longer. 1 started at 12 and subtracted 2 to get to ten. I know $10-5=5$, so $12-7=5$. That means $12-7=(12-2)-5=5$.

## Discuss the Strategies

## Day

- How can Color Tiles be used to model the problem?
The Color Tiles can be used to represent the lengths of the 2 hands. I can compare the lengths of the Color Tiles to find the difference in the lengths in real life.
- How are the strategies similar? How are they different?
Each strategy finds Bree's father's hand is 7 tiles longer than her brother's hand. The first strategy uses adding on to find the difference. The other 2 strategies use subtraction to find the difference.


## Look Out!

- For students finding an incorrect difference in length: Make sure students are modeling the correct lengths with their Color Tiles.
- For students who need a starting point: Model how to set up the problem.


## Measure Lengths with Objects

## Create a Problem




## Materials

- Color Tiles (15 per pair)



## Ask Questions

- Who or what will the problem be about? The problem will be about 2 trucks.
- What information will you need to give in the problem? I need to give that there are 2 trucks that are different lengths.
- What question could you ask?

How long are the trucks together?

## Get Hands-On

- Pass out the Color Tiles (15 per pair).
- Have students represent the problem using Color Tiles. Then write a word problem.

$\qquad$

Solve and Share
SAMPLE PROBLEM
My toy truck is 7 tiles long. My friend's truck is 6 tiles long. How long are the trucks altogether?


