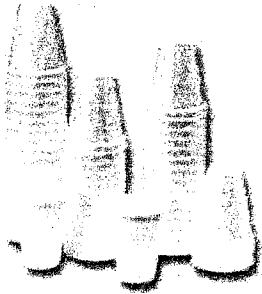


A

Activity Sheet Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



NUMBER OF CUPS	HEIGHT (IN CM)
1	7 cm
2	7.5 cm
3	8 cm
4	8.5 cm
5	9 cm
6	9.25 cm
7	9.5 cm
8	10 cm
9	10.25 cm
10	10.75 cm

Let x be the number of cups, and let y be the height of the stack. Plot all points (x, y) and analyze the data.

1. What category of function can be used to approximate the data?

Linear

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

Function

$$y = \frac{1}{2}x + 6.5$$

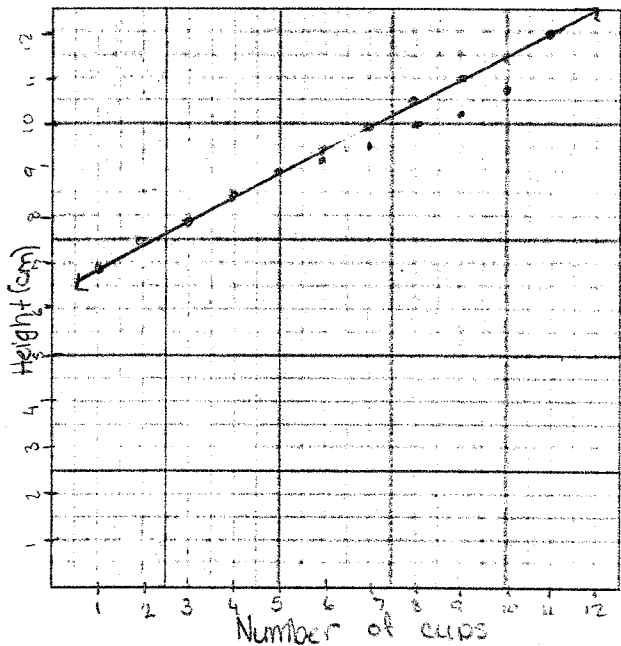
$(1, 7)$ $(2, 7.5)$

$$\frac{7.5 - 7}{2 - 1} = \frac{0.5}{1} = \frac{1}{2}$$

$$y = \frac{1}{2}x + b$$

$$7 = \frac{1}{2} + b$$

$$b = 6.5$$



A

Cup activity

$$y = (107)0.5 + 6.5$$

$$y = 60$$

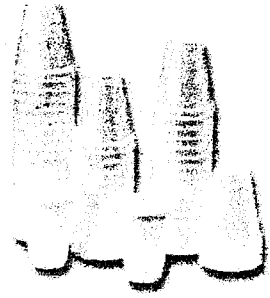
3. Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

The box will need to be about 60cm tall, because the function for the height of a stack of cups is $y = 0.5x + 6.5$, where x is the number of cups and y is the total height (in cm) of the stack. When you plug 107 in as x , you get a total of 60cm for the height. Thirsty cup could tell how tall the box should be for any number of cups by using the function $y = 0.5x + 6.5$, and plugging the # of cups in as x , and y would be the height in centimeters that the box should be.



Activity Sheet Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



NUMBER OF CUPS	HEIGHT (IN CM)
1	7.2
2	7.7
3	8.1
4	8.1 8.3
5	8.7
6	9.1

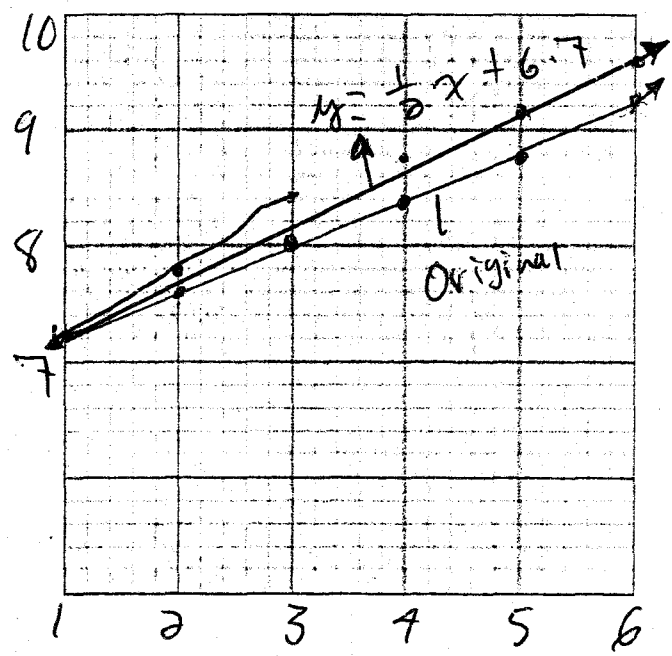
Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

1. What category of function can be used to approximate the data?

linear

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

$$y = \frac{1}{2}x + 6.7$$



B
Cup activity

3. Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

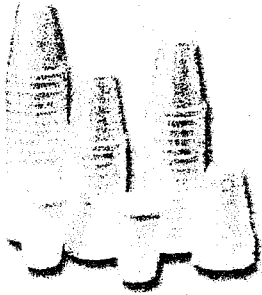
Each cup added adds 0.4 cm.

The cups add up to
60.7 cm

Activity Sheet

Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



x NUMBER OF CUPS	y HEIGHT (IN CM)
1	7.25
2	7.65
3	8.0
4	8.4
5	8.85
6	9.2
7	9.5
8	9.95
9	10.35
10	10.65

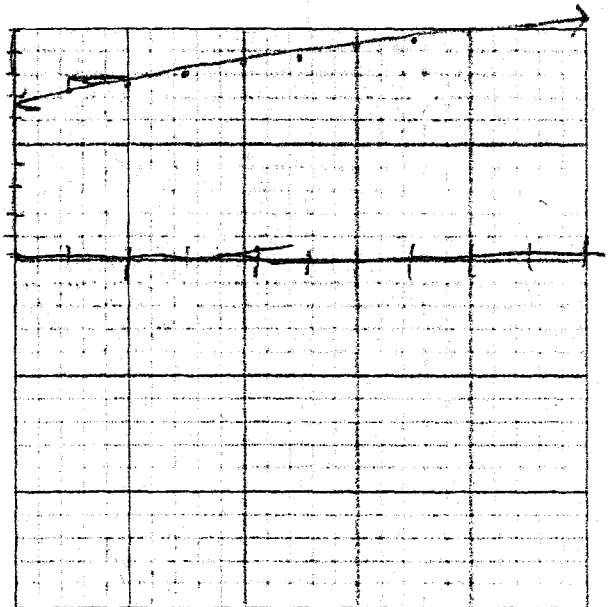
Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

1. What category of function can be used to approximate the data?

linear

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

$$y = 0.4x + 7.25$$





Cup activity

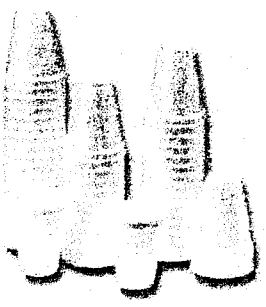
3. Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

D

Activity Sheet

Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



NUMBER OF CUPS	HEIGHT (IN CM)
1	7
2	7.5
3	8
4	8.5
5	9
6	9.5
7	10
8	10.5
9	~
10	~

Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

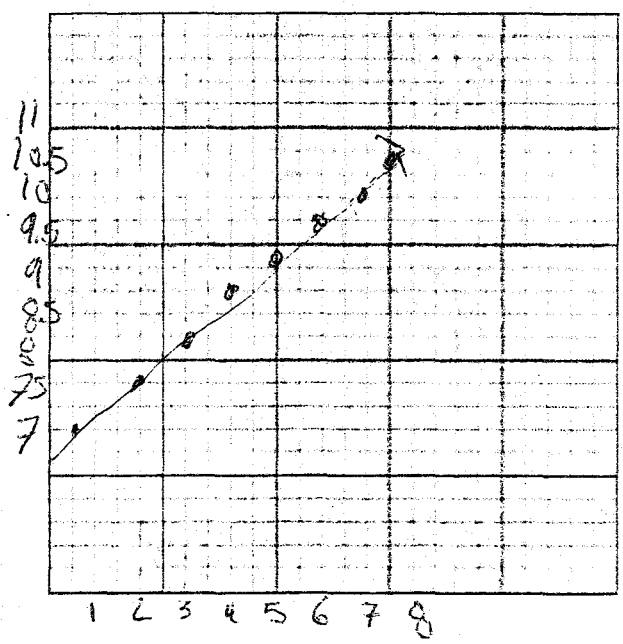
1. What category of function can be used to approximate the data?

linear

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

~~Y = 0.5x + 7~~

$Y = 0.5x + 7$



D Cup tivity

Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

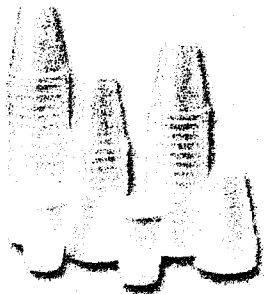
60 cm

6.5+

Activity Sheet

Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



NUMBER OF CUPS	HEIGHT (IN CM)
0	0
1	6.5
2	7
3	7.5
4	8
5	8.5
6	9
7	9.5
8	10
9	10.5

Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

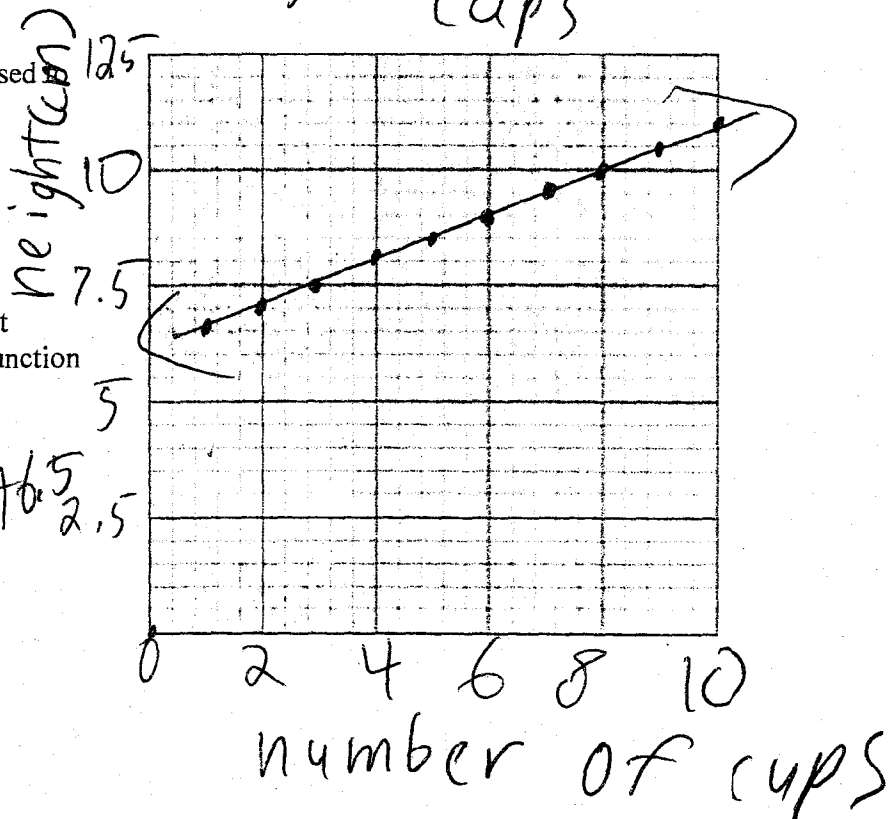
height vs. number of cups

1. What category of function can be used to approximate the data?

linear

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

$$y = \frac{7}{2}x + 6.5$$





3. Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

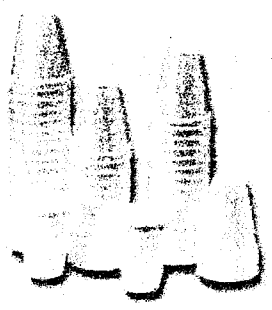
60cm

$$6.5 + (0.5 \times 107) = 60\text{cm}$$

For every cup you add on on top you add 0.5 cm, you multiply the 0.5 cm by the 107 cups. Then you have to add the original 6.5 cm, ^{because} that's how tall the first cup is.

Activity Sheet Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



NUMBER OF CUPS	HEIGHT(IN CM)
1	7 CM.
2	14 CM.
3	21 CM.
4	28 CM.
5	35 CM.
6	42 CM.

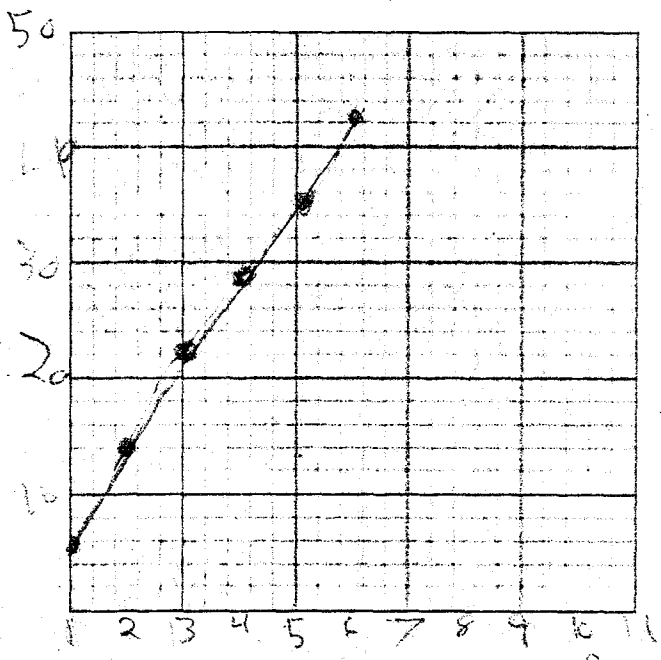
Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

1. What category of function can be used to approximate the data?

linear

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

$$y = 7x$$



F

Activity

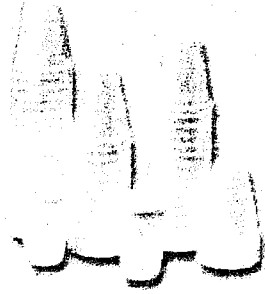
3. Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

It will be $53\frac{1}{2}$ cm = 20 holes to
take the number of cups and multiply
it by the average diameter of each
cup

Activity Sheet

Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



NUMBER OF CUPS	HEIGHT (IN CM)
1	7cm
2	7.5cm
3	8cm
4	8.5cm
5	9cm
6	9.5cm
7	10cm
8	10.5cm
9	11cm
10	11.5cm

Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

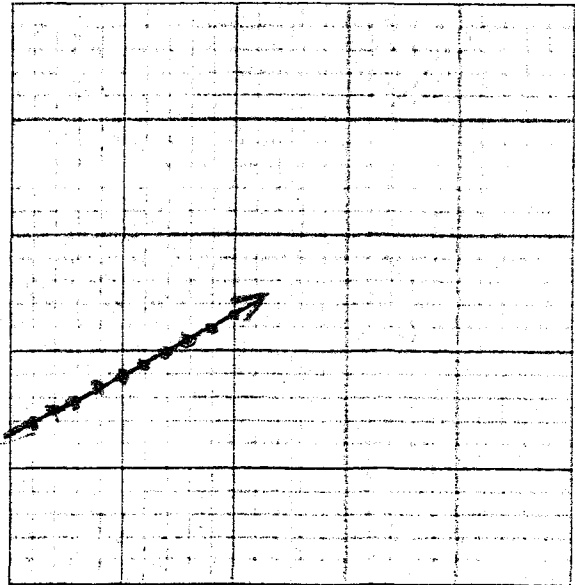
1. What category of function can be used to approximate the data?

Linear

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

$$y = \frac{1}{2}x + 6.5$$

↑
increased





3. Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

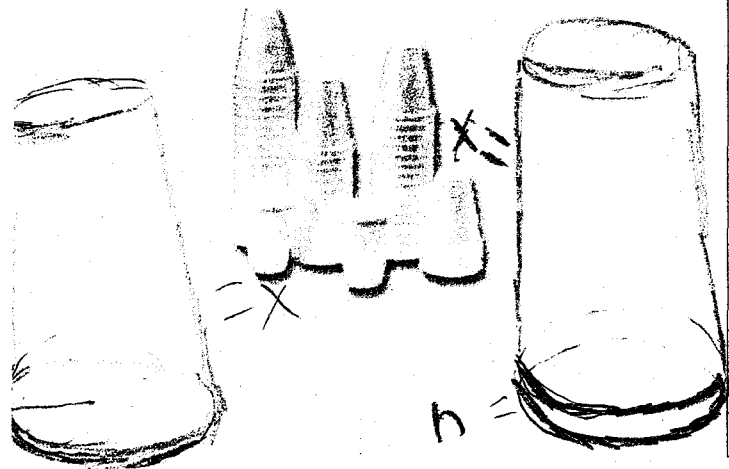
The box would need to be at least 60 cm tall for 107 cups to fit. One cup is 7 cm tall and adding a cup increases the height by $\frac{1}{2}$ cm. So, $106 \times .5 = 53$, + the original cup, equals 60 cm. The company can determine the height needed by multiplying the rate of increase, $\frac{1}{2}$ cm, by the number of cups added, plus the height of the original cup, 7 cm. That equation will allow you to find the height needed.



Activity Sheet Stacking Cups

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.

$x = 7$
 $n = 5$



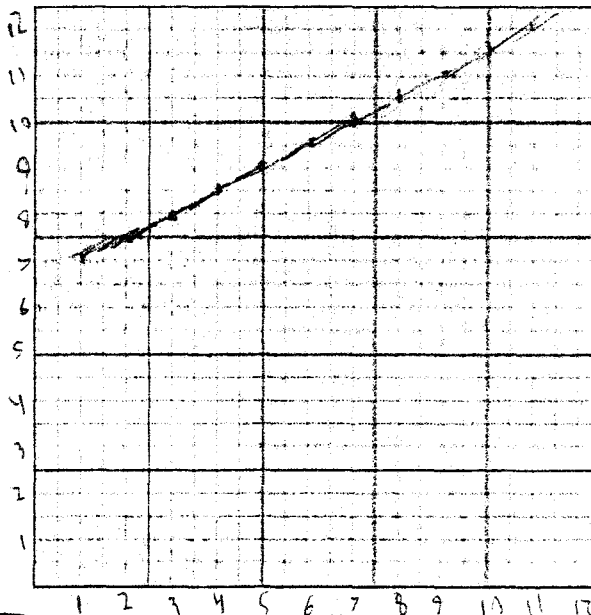
x	y
NUMBER OF CUPS	HEIGHT (IN CM)
1	7
2	7.5
3	8
4	8.5
5	9
6	9.5
7	10
8	10.5
9	11
10	11.5

Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

1. What category of function can be used to approximate the data?

linear
I did find a formula

2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.



$$y = x + (c-1)n$$

$$y = x + (c-1)n$$

Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

Box = 60 cm tall

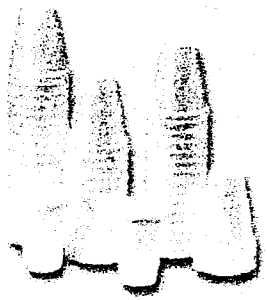
Just add the space that comes from the space between stacked cups for each extra cup.

Activity Sheet

Stacking Cups

NAME _____
 DATE _____

We want to know the height of a stack of cups. Measure the height of one cup. Stack a second cup on the first and measure the new height of cups. Measure the height of stacks of cups made with different numbers of cups.



NUMBER OF CUPS	HEIGHT (IN CM)
10	10.5

Let x be the number of cups, and let y be the height of the stack. Plot all points (x,y) and analyze the data.

1. What category of function can be used to approximate the data?
2. Find the equation for a function that approximates the data. Graph the function over your scatter plot.

I activity

3. Thirsty Cup Company normally sells 100 cups stacked in a box, but is marketing a bonus package containing 107 stacked cups. How tall will the box need to be for the stack of 107 cups? Explain your thinking and how you could tell Thirsty Cup how tall the box would need to be for any number of cups.

Well at 1st I measured 10 cups
I got 10.5 centimeters, I know 10×10
equals 100 so I multiplied 10.5×10
got 105 centimeters then took off 3 cups
& measured 7 to get 9.5 then I added

105 centimeters to 9.5

$$\begin{array}{r} 105 \\ + 9.5 \\ \hline 114.5 \text{ centimeters} \end{array}$$

I got my answer of 114.5 centimeters

$$\begin{array}{r} 10.5 \text{ centimeters} = 10 \text{ cups} \\ \times 10 \\ \hline 105 \text{ centimeters} = 100 \text{ cups} \end{array}$$

$$9.5 \text{ centimeters} = 7 \text{ cups}$$