

Galaxy  
of  
Problems #4

Build an arrow road from 105 to 134 using +10 and -1 arrows.  
Use less than five arrows in your road.

105  
●

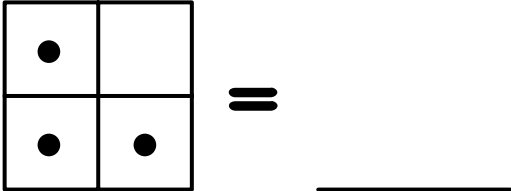
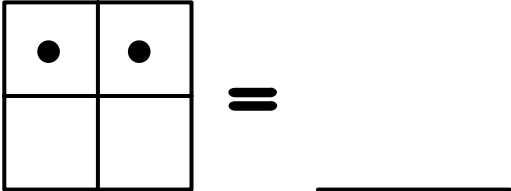
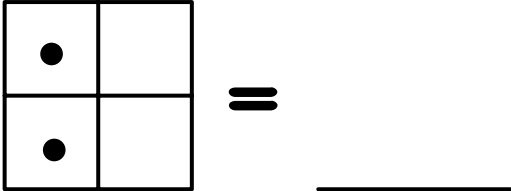
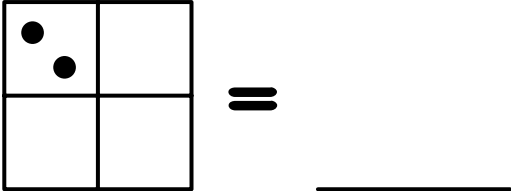
+10

-1

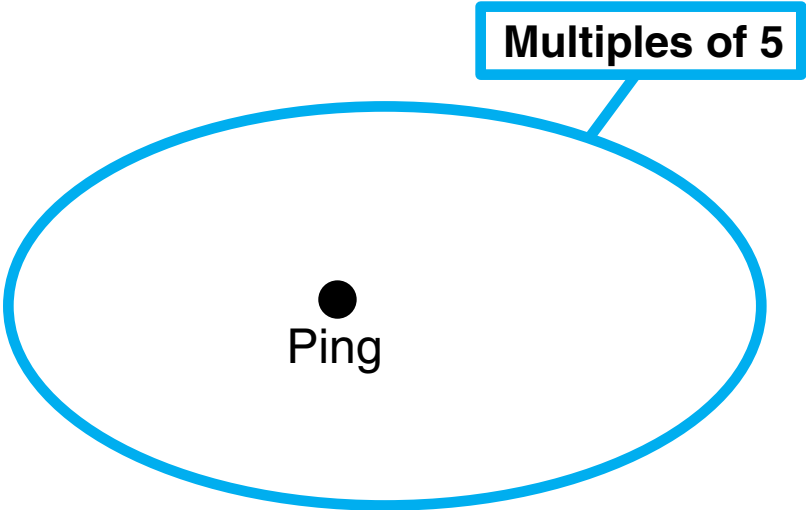
●  
134

Ping is a secret number.

Ping is one of these numbers.



Ping is in this string picture.

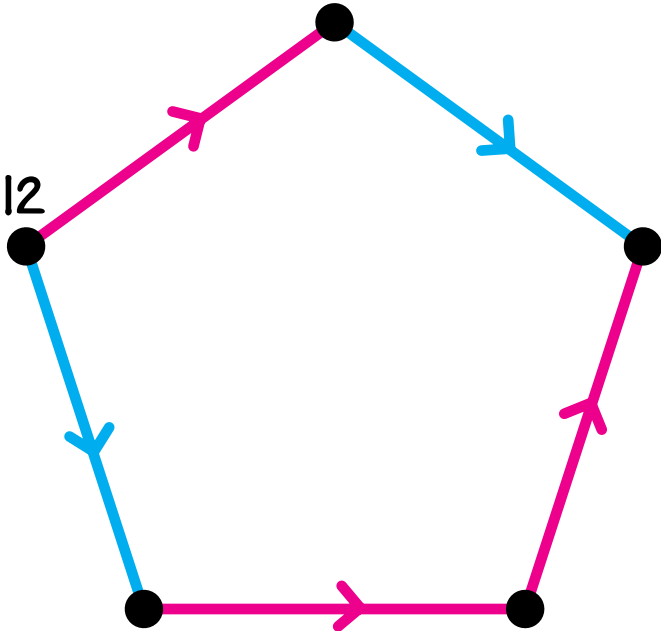
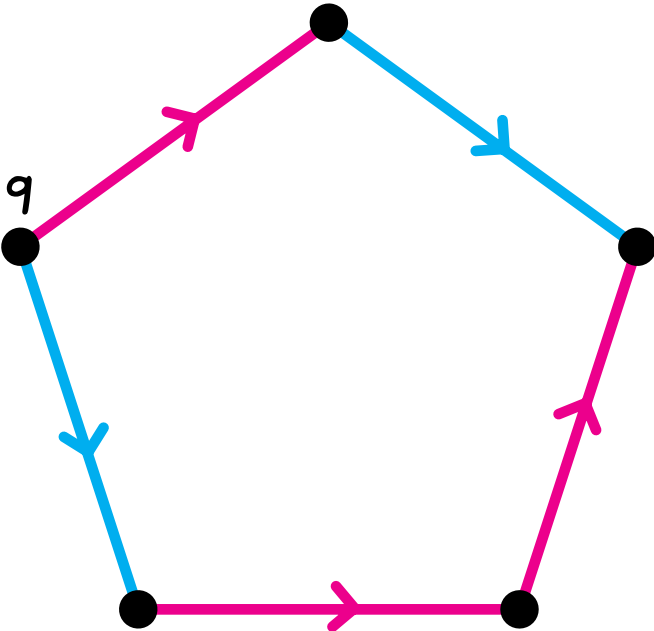


Who is Ping? \_\_\_\_\_

Label the dots.

2x

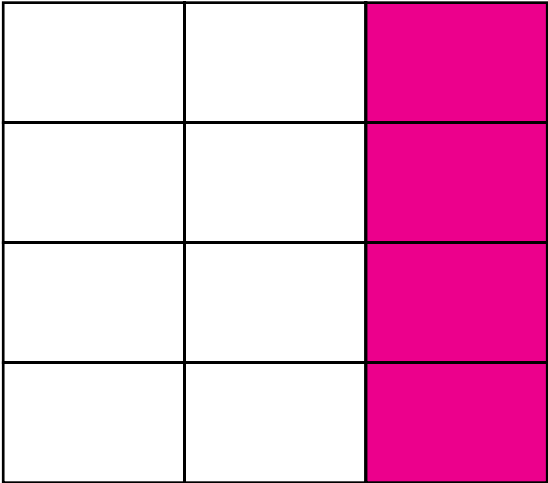
+3



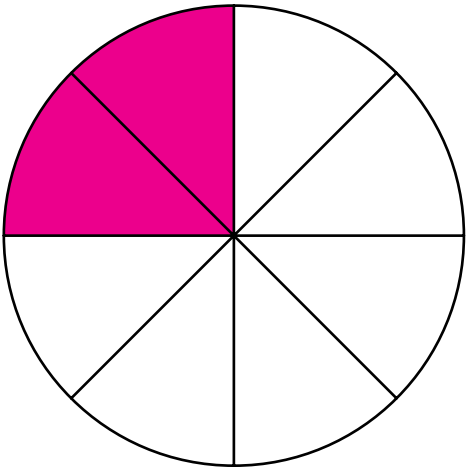
Complete this subtraction table.

<b>-</b>	<b>3</b>	<b>5</b>	<b>9</b>
<b>10</b>			
<b>20</b>			
<b>30</b>			
<b>40</b>			
<b>50</b>			

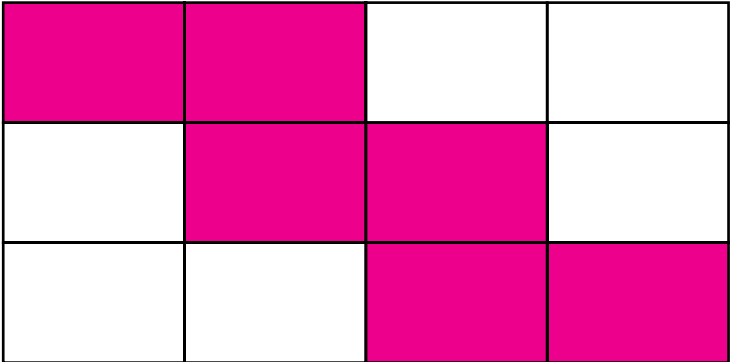
What fractional part of each shape is colored red?



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

Complete.

		10			

 = \_\_\_\_\_

$10 \times 20 = \underline{\hspace{2cm}}$

				10	
			10		

 = \_\_\_\_\_

$10 \times 18 = \underline{\hspace{2cm}}$

					10
				10	

 = \_\_\_\_\_

$10 \times 6 = \underline{\hspace{2cm}}$

			10		10

 = \_\_\_\_\_

$10 \times 44 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 15 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ \times 10 \\ \hline \end{array}$$

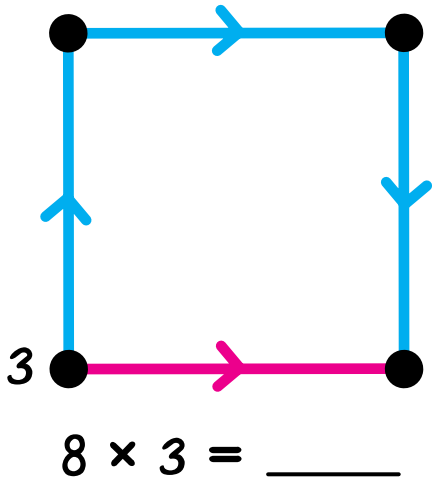
$$\begin{array}{r} 43 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ \times 10 \\ \hline \end{array}$$

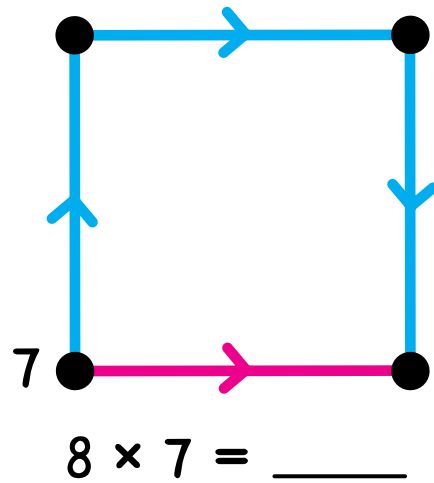
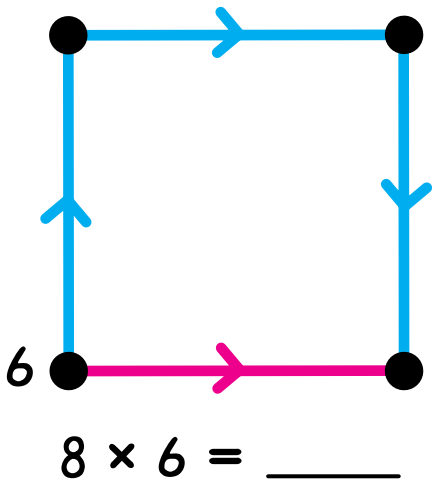
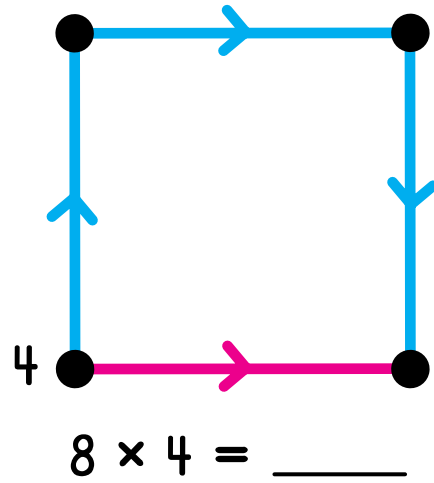
$$\begin{array}{r} 79 \\ \times 10 \\ \hline \end{array}$$

Label the dots and complete the number sentences.

2×



8×





Complete these number sentences.

$$2 \times (7 + 1) = \underline{\hspace{2cm}}$$

$$(2 \times 7) + 1 = \underline{\hspace{2cm}}$$

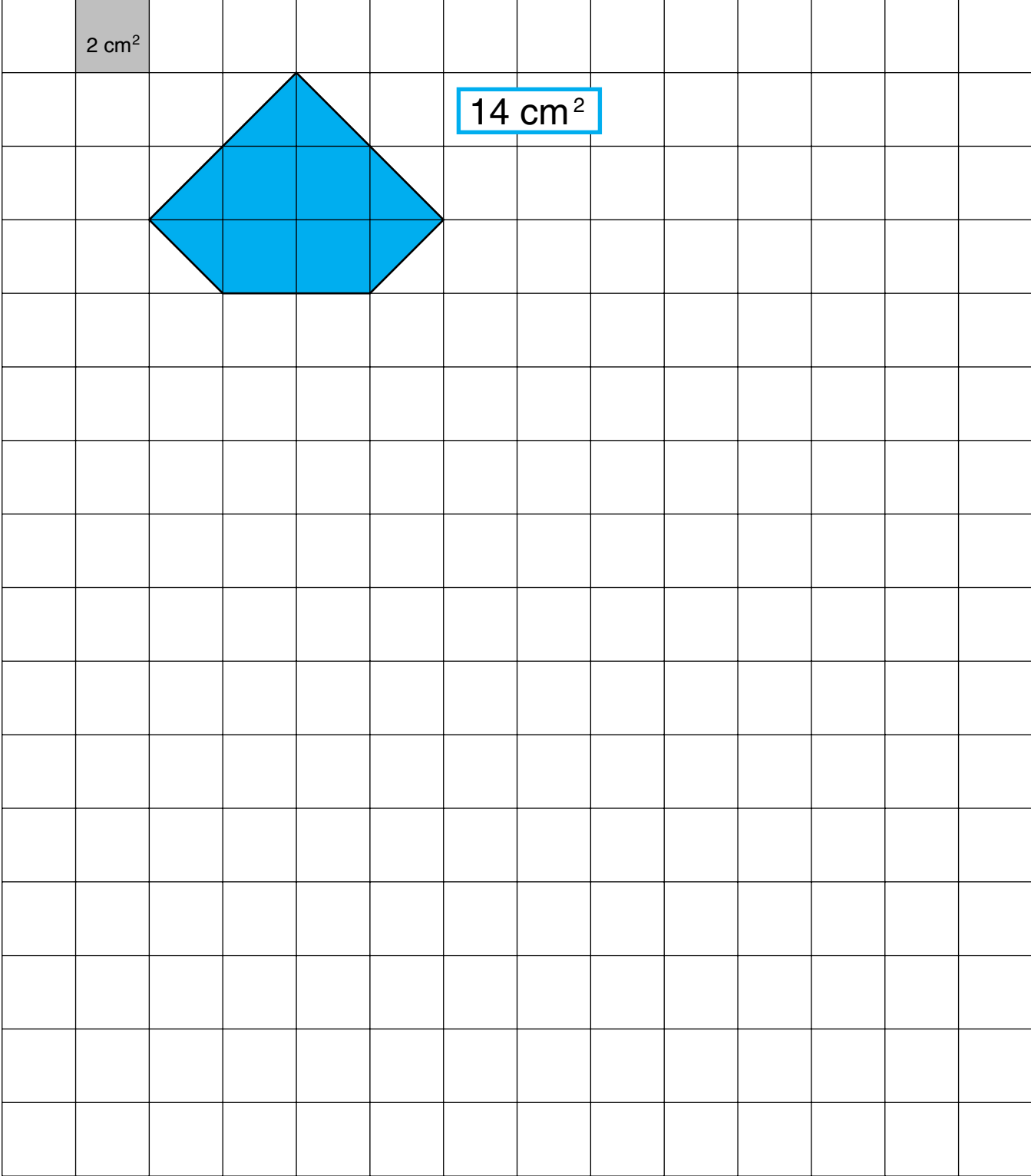
$$2 + (7 \times 1) = \underline{\hspace{2cm}}$$

$$(2 + 7) \times 1 = \underline{\hspace{2cm}}$$

$$(2 \times 1) + 7 = \underline{\hspace{2cm}}$$

$$(2 + 1) \times 7 = \underline{\hspace{2cm}}$$

The blue shape has area  $14 \text{ cm}^2$ .  
Color four more shapes with area  $14 \text{ cm}^2$ .



Build an arrow road from 3 to 42 using  $10\times$  and  $+1$  arrows.  
Use less than five arrows in your road.

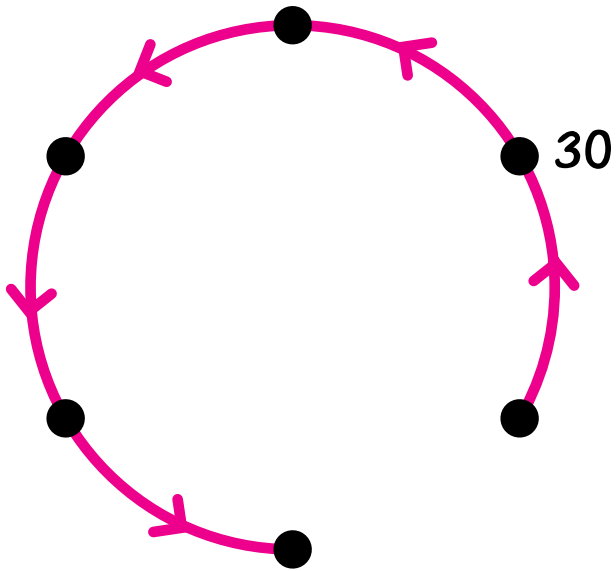
3  
●

$10\times$

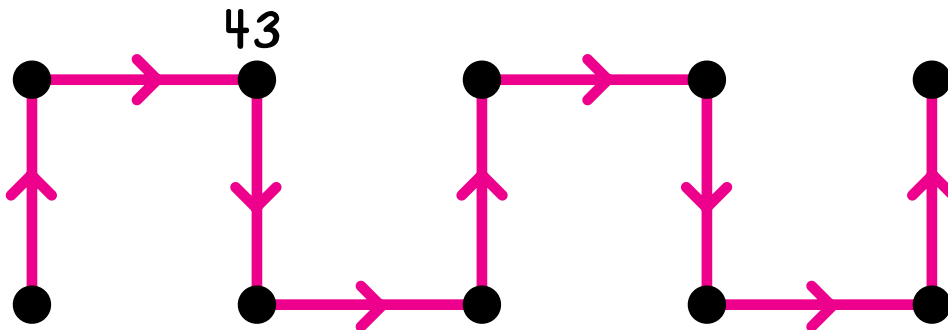
$+1$

●  
42

Label the dots. Draw all the missing  $-10$  arrows.

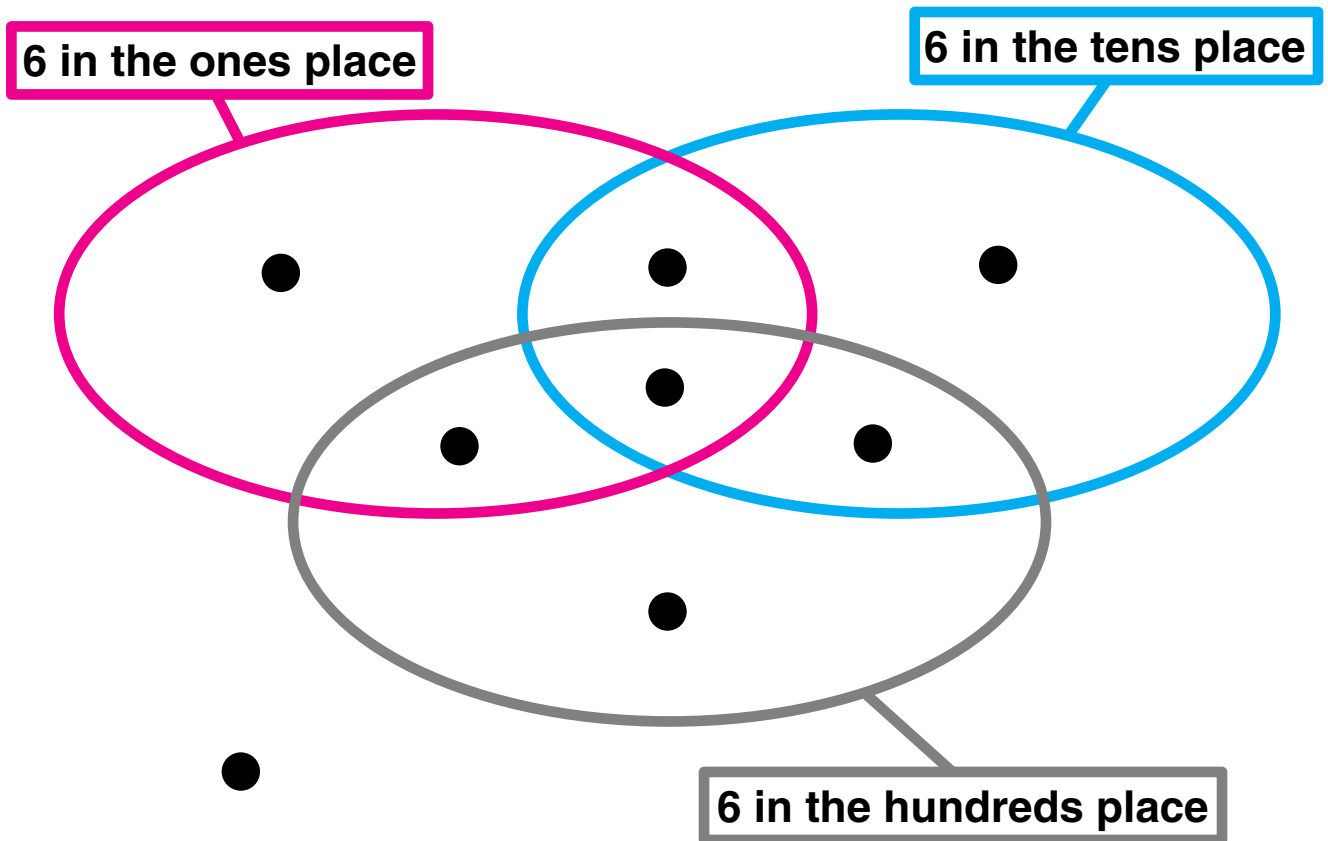


$-5$   
 $-10$

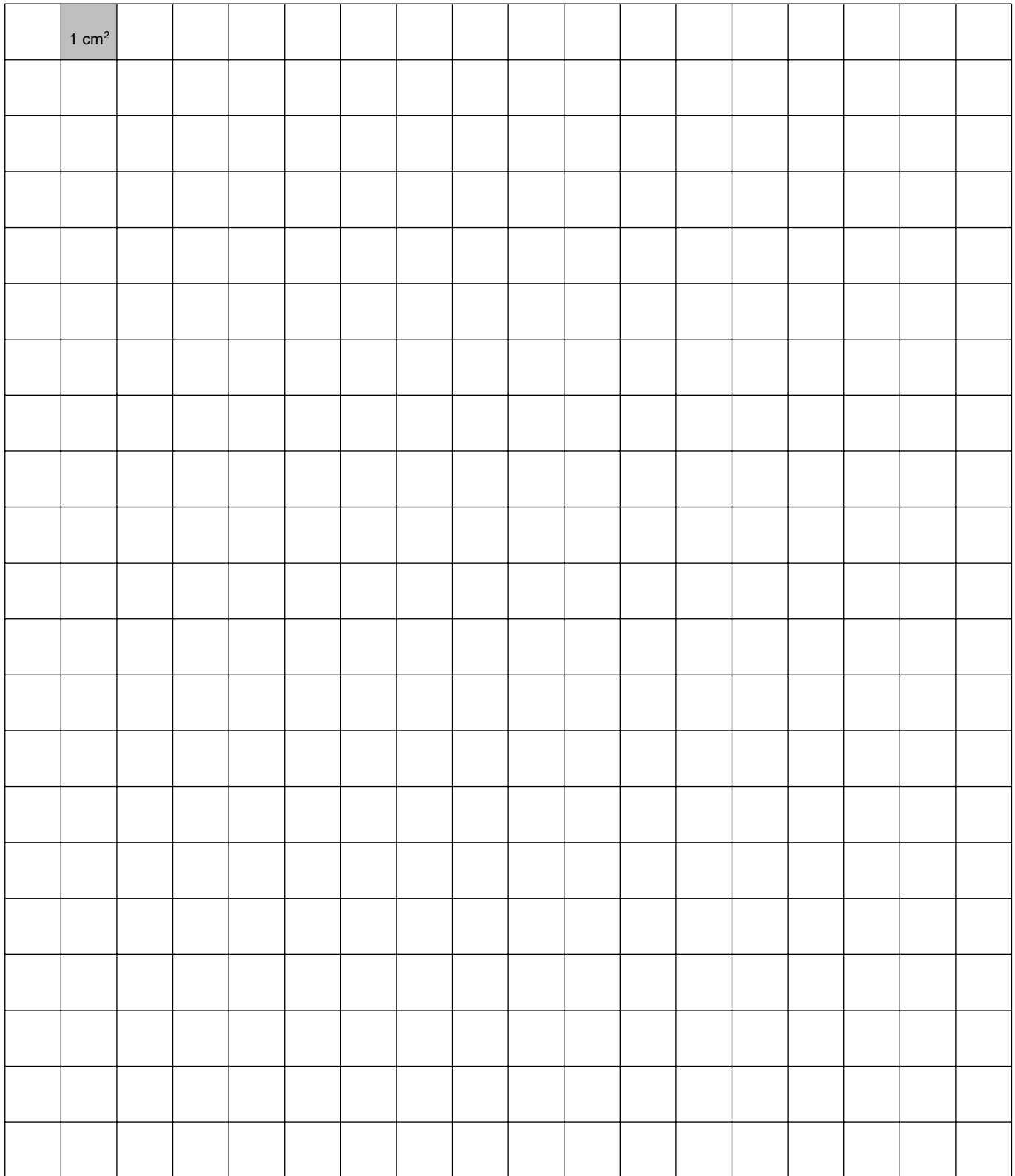


You should find twelve  $-10$  arrows.

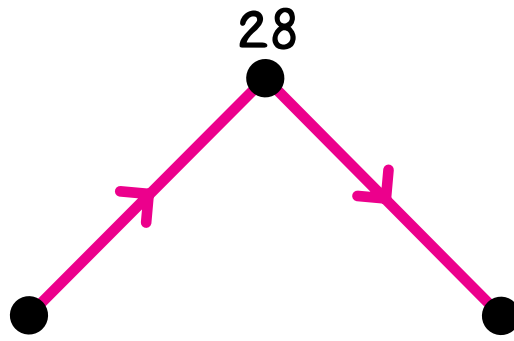
Label the dots with whole numbers.  
Many solutions are possible.



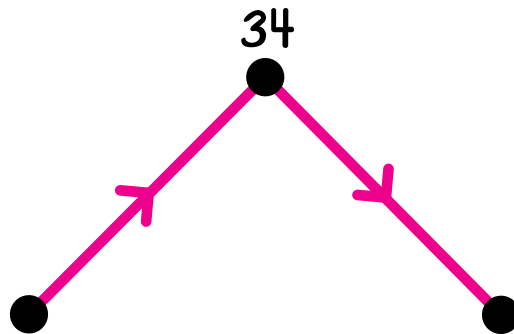
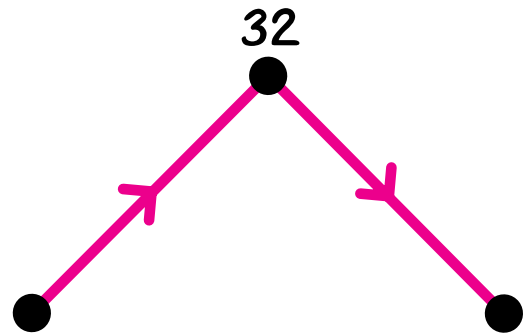
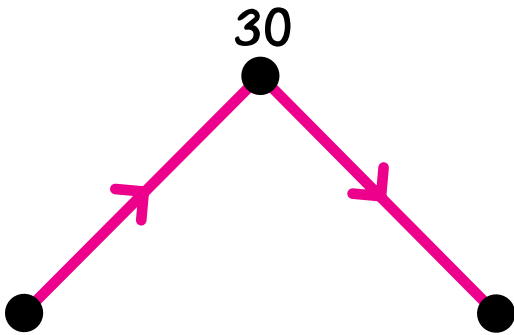
Color several rectangles that have area  $16 \text{ cm}^2$ . Try to find three or more different rectangles.



Label the dots.



2x



$2 \times 15 = \underline{\quad}$

$2 \times 17 = \underline{\quad}$

$2 \times 19 = \underline{\quad}$

$28 \div 2 = \underline{\quad}$

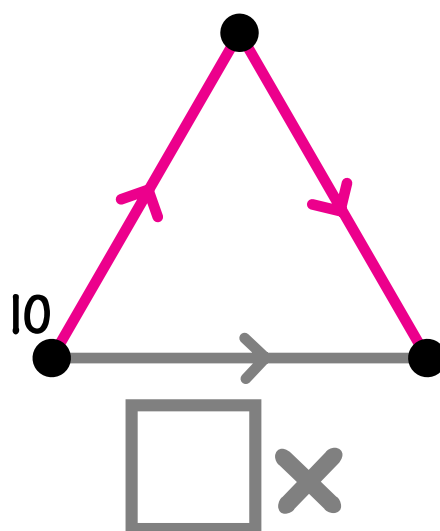
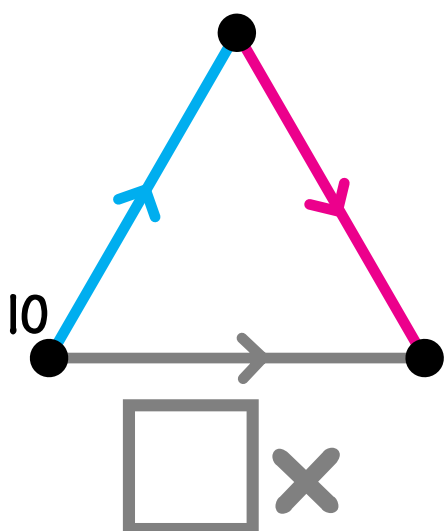
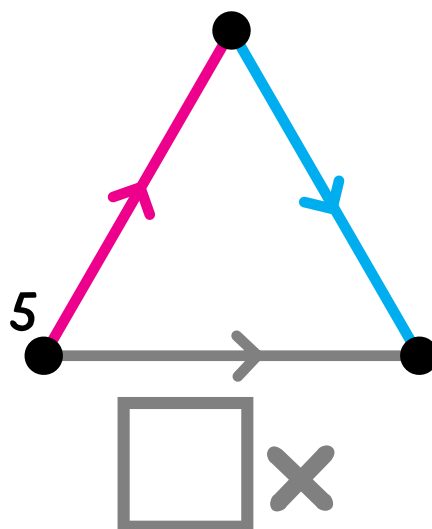
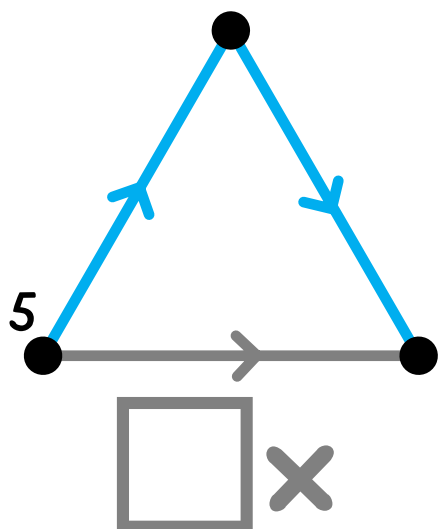
$32 \div 2 = \underline{\quad}$

$38 \div 2 = \underline{\quad}$

Label the dots. Fill in the box for each gray arrow.

2x

3x





Complete.

$$\begin{array}{r} 20 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} 50 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} 90 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ -15 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ -17 \\ \hline \end{array}$$

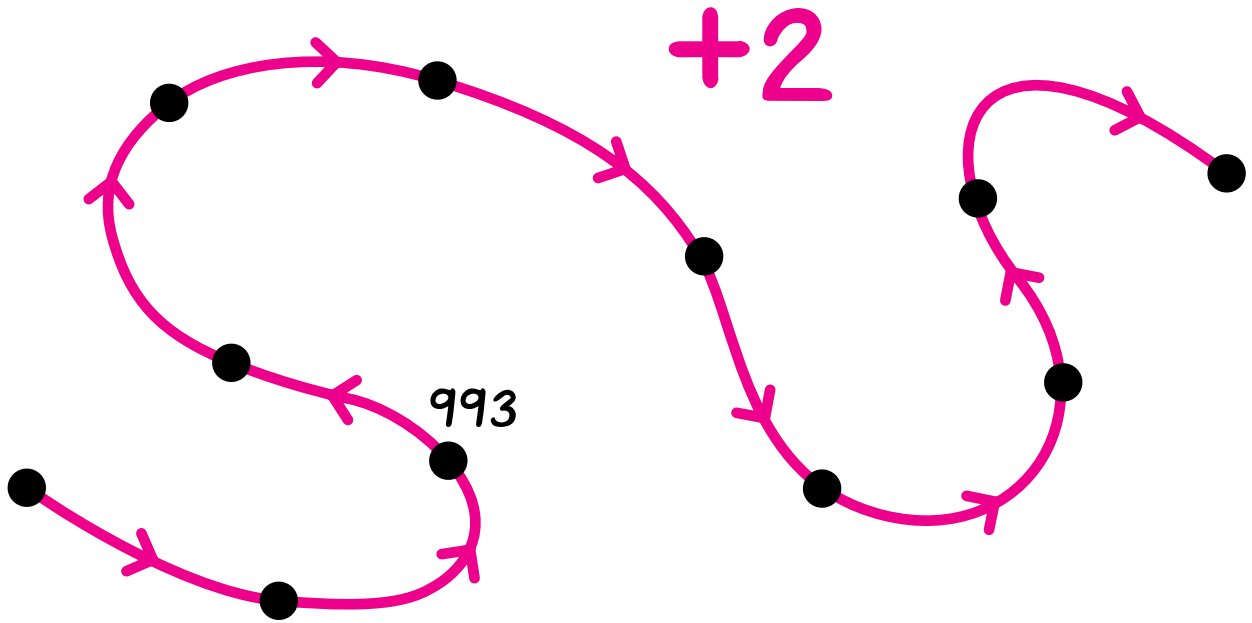
$$\begin{array}{r} 45 \\ -19 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ -14 \\ \hline \end{array}$$

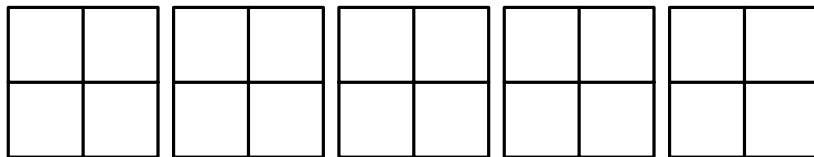
$$\begin{array}{r} 67 \\ -29 \\ \hline \end{array}$$

$$\begin{array}{r} 73 \\ -32 \\ \hline \end{array}$$

Pang is a secret number.  
Pang is in this arrow picture.



Pang can be put on this Minicomputer using exactly one regular checker and one negative checker.



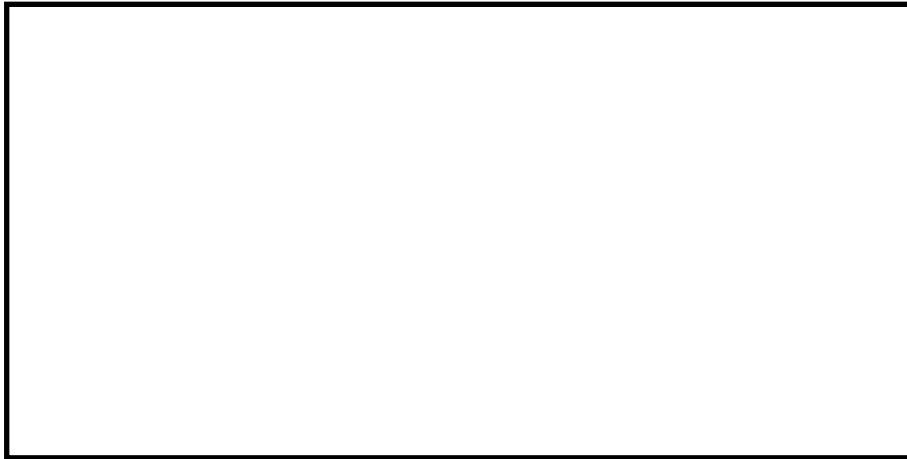
Who is Pang? \_\_\_\_\_

Put Pang on the Minicomputer.

Divide this rectangle and color one-half ( $\frac{1}{2}$ ).



Divide this rectangle and color three-fourths ( $\frac{3}{4}$ ).



Divide this rectangle and color two-thirds ( $\frac{2}{3}$ ).



Share 105 marbles fairly among Nick, Cathy, and Jule.

For Nick	For Cathy	For Jule

Write a number sentence about this sharing.

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Share 152 marbles fairly among Kyle, Mae, Chas, and Liana.

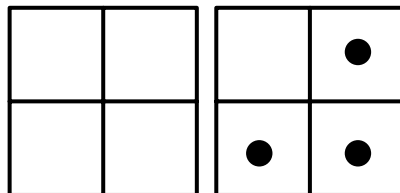
For Kyle	For Mae	For Chas	For Liana

Write a number sentence about this sharing.

Tip is a secret number.

Clue 1

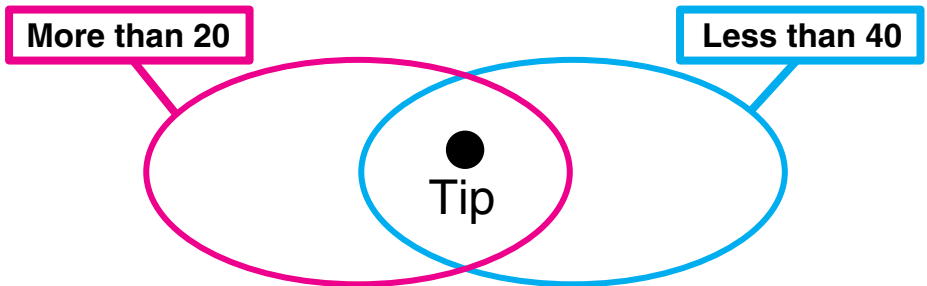
Tip can be put on this Minicomputer by moving one of these checkers to the tens board.



Which numbers could Tip be? \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

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Clue 2

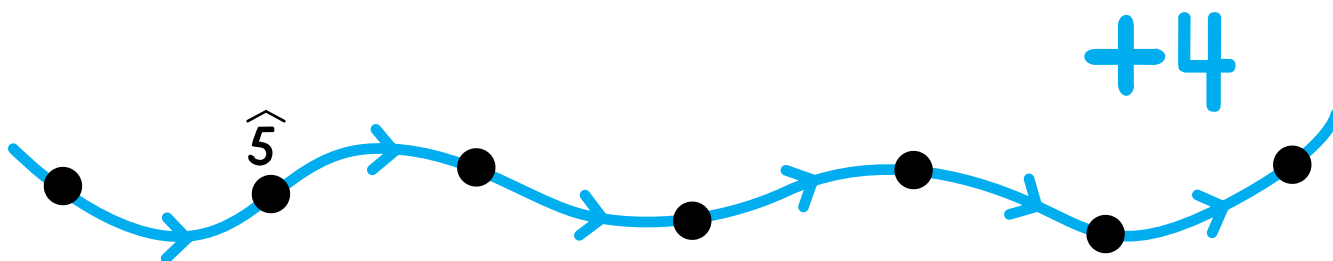


Tip could be \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

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Clue 3

Tip is on the same +4 arrow road as  $\hat{5}$ .



Who is Tip? \_\_\_\_\_

Label the dots in this picture with these numbers:

$3 \times 7$

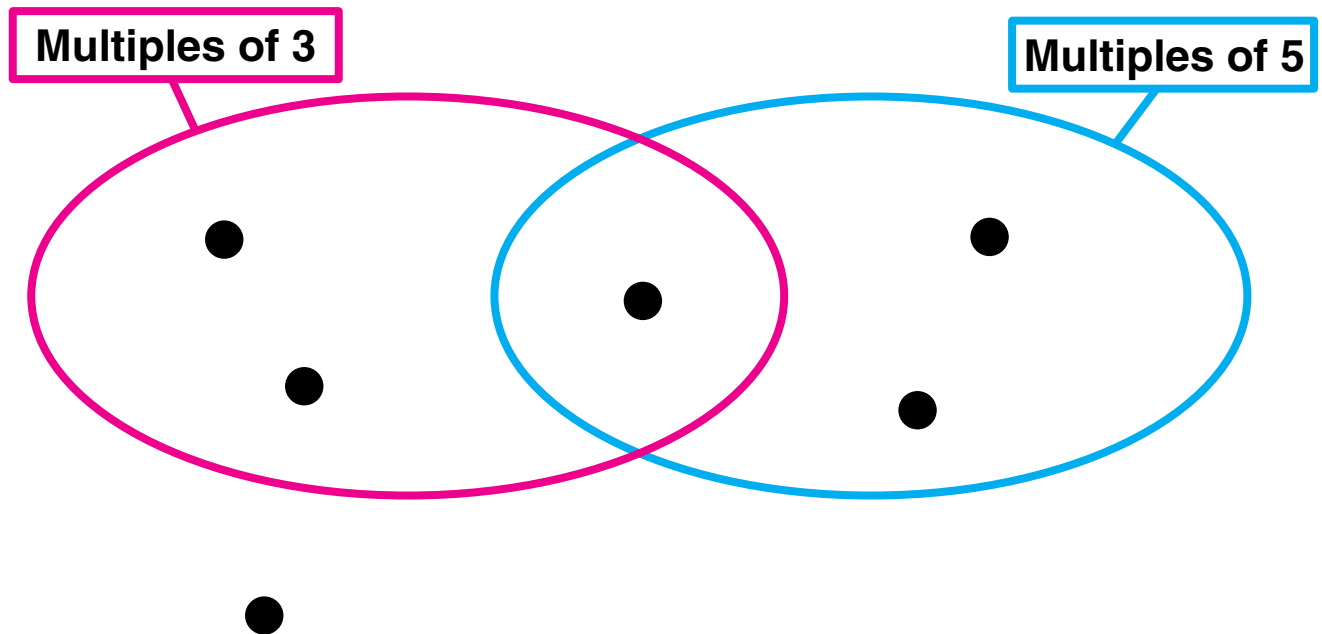
$7 \times 11$

$995$

$5 \times 13$

$3 \times 25$

$33 + 9$



## School Carnival

Tickets cost 15¢ each

### Booths

Face Painting — 6 tickets  
Fortune Telling — 5 tickets  
Ride the Pony — 6 tickets  
Grab Bag — 4 tickets

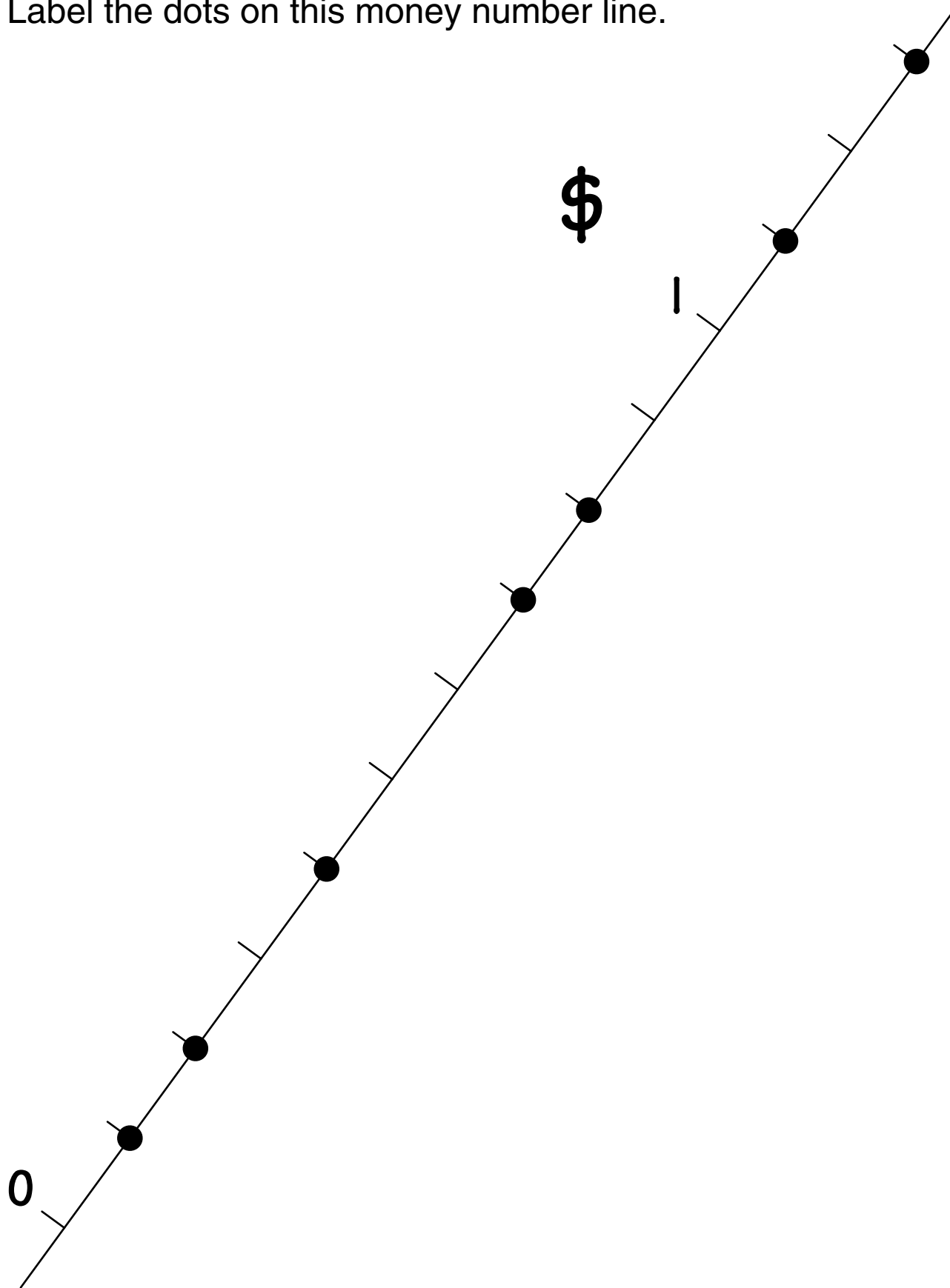
### Food

Hotdog — 6 tickets  
Drink — 4 tickets  
Cookie — 2 tickets  
Chips — 3 tickets

Frankie goes to the carnival with \$3.00. How many tickets can he buy? \_\_\_\_\_

Frankie wants to use all his tickets. He decides to use half of his tickets on booths and half on food. What booths could he go to? What food could he get?

Label the dots on this money number line.

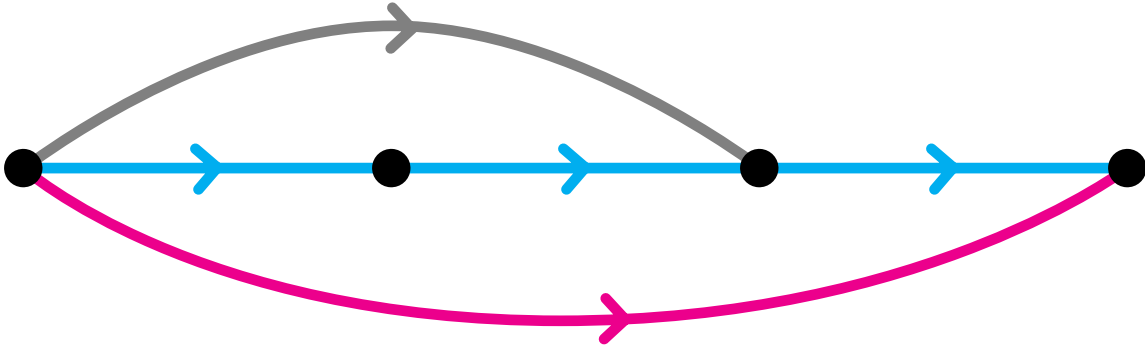




2x

4x

8x



Complete this table.

Starting Number	2x	4x	8x
12			
16			
25			
50			
61			

Complete.

$$\begin{array}{r} 154 \\ + \\ \hline 659 \end{array}$$

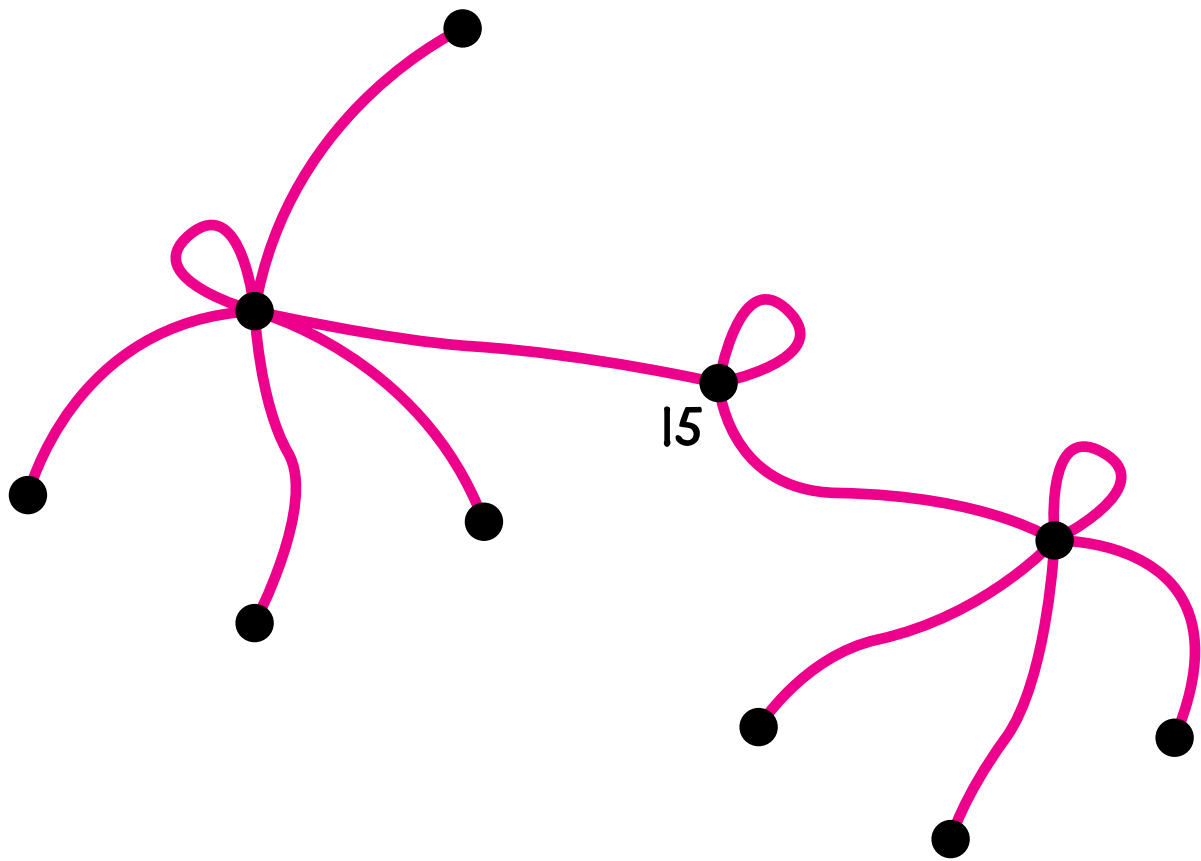
$$\begin{array}{r} 39 \\ + \\ \hline 91 \end{array}$$

$$\begin{array}{r} 408 \\ + \\ \hline 765 \end{array}$$

$$\begin{array}{r} 273 \\ + \\ \hline 400 \end{array}$$

Label the dots. Many solutions are possible.

Two numbers may talk to each other  
if and only if  
one number is a multiple of the other.

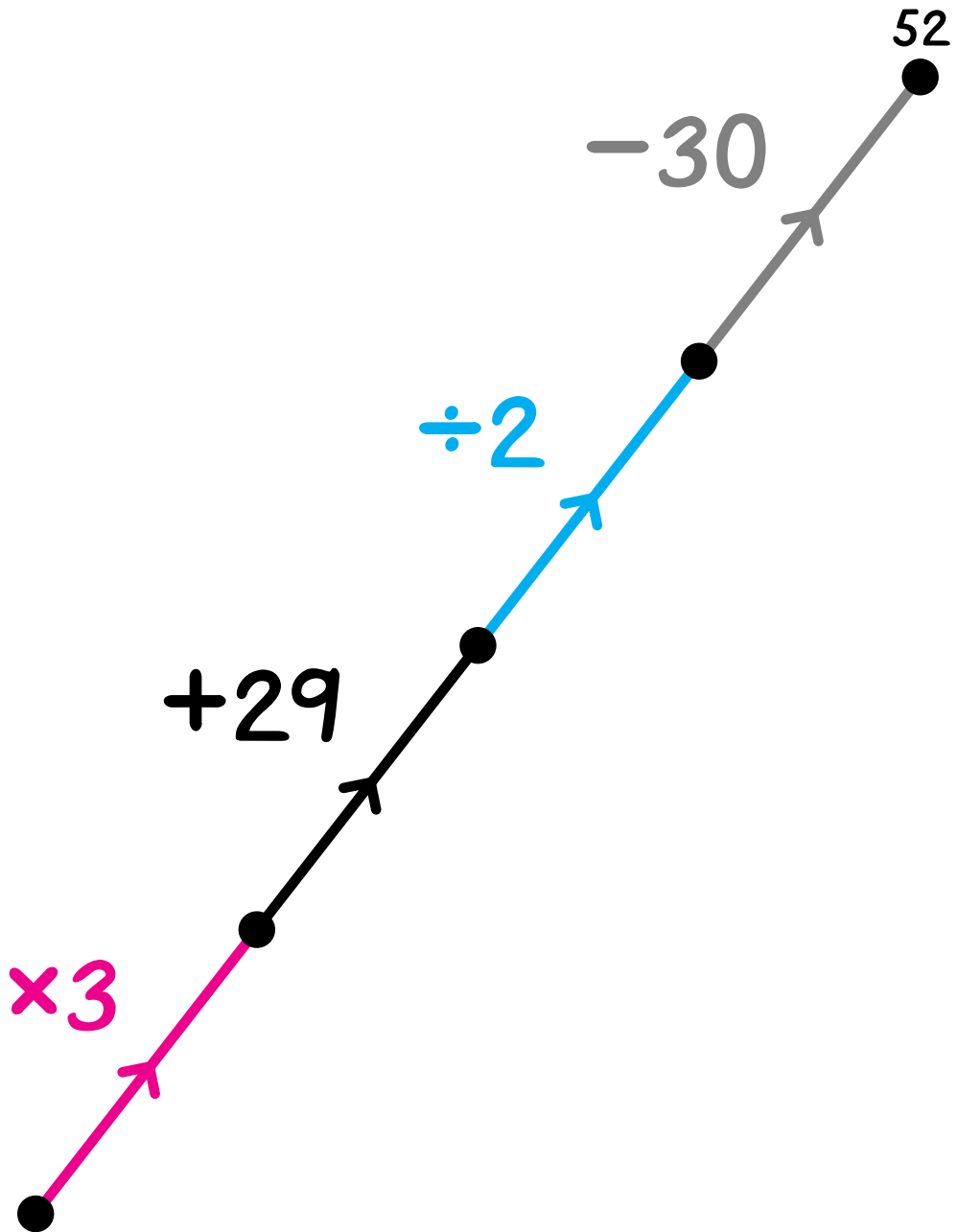


Rona wants to buy 12 pencils. Pencils are in packages of 2 for 45¢ and in packages of 3 for 65¢. What should Rona buy? Explain your answer.

How much will 12 pencils cost? \_\_\_\_\_

Rona has \$5.00. Can she buy 12 pencils? \_\_\_\_\_  
If yes, how much change will she get? \_\_\_\_\_

Draw and label all the return arrows.  
Label the dots.



What number is on the Minicomputer?

				●	●
	●	●	●	●	

 = \_\_\_\_\_

Put these numbers on the Minicomputer by moving exactly one checker.


 = 174


 = 157


 = 464


 = 224


 = 160

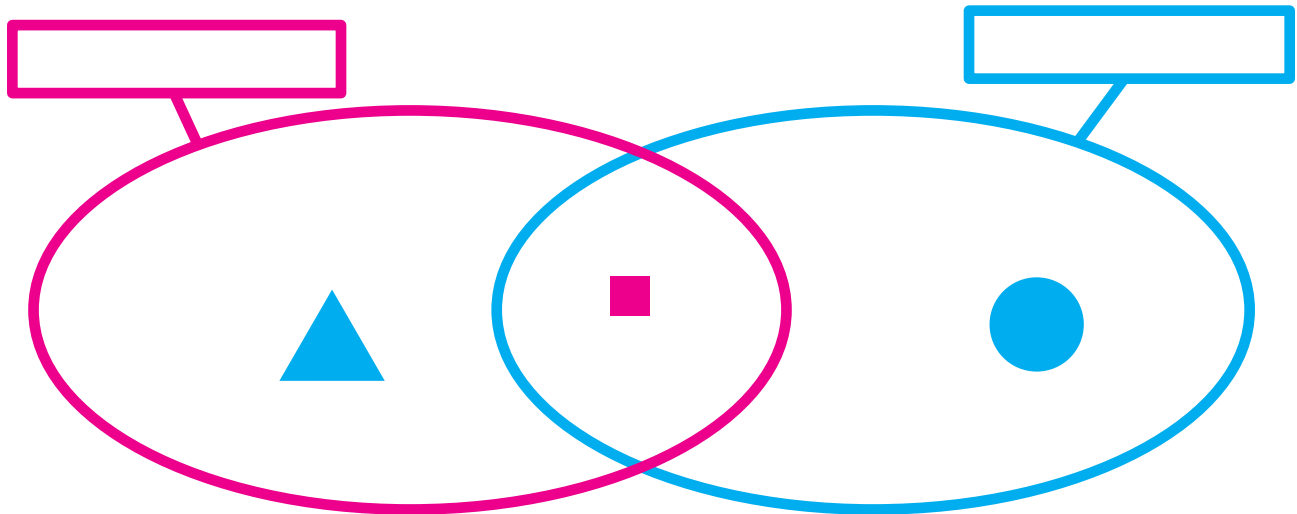
The red string is for one of these:

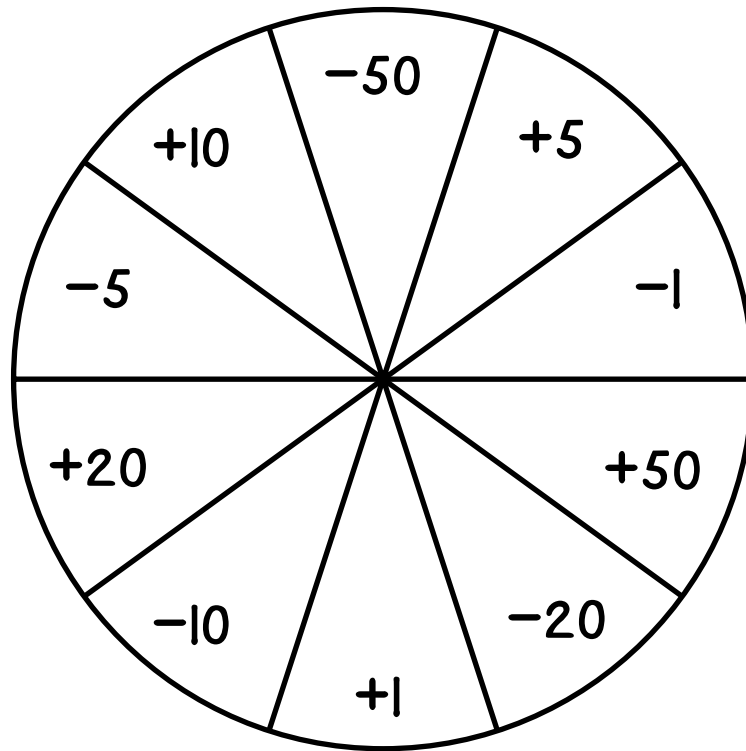
<b>RED</b>	<b>YELLOW</b>	<b>GREEN</b>	<b>BLUE</b>
<b>NOT RED</b>	<b>NOT YELLOW</b>	<b>NOT GREEN</b>	<b>NOT BLUE</b>
○	△	□	<b>BIG</b>
<b>NOT</b> ○	<b>NOT</b> △	<b>NOT</b> □	<b>LITTLE</b>

The blue string is for one of these:

<b>RED</b>	<b>YELLOW</b>	<b>GREEN</b>	<b>BLUE</b>
<b>NOT RED</b>	<b>NOT YELLOW</b>	<b>NOT GREEN</b>	<b>NOT BLUE</b>
○	△	□	<b>BIG</b>
<b>NOT</b> ○	<b>NOT</b> △	<b>NOT</b> □	<b>LITTLE</b>

Label the strings.





Some of these scores are possible after four spins. Show how you could get them.

Some of these scores are not possible after four spins. Cross them out.

**75**

**100**

**76**

**101**

**77**

**102**