

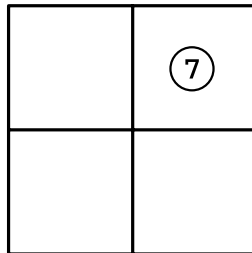
Name _____

Arcade of Problems #5

Lipa is a secret number.

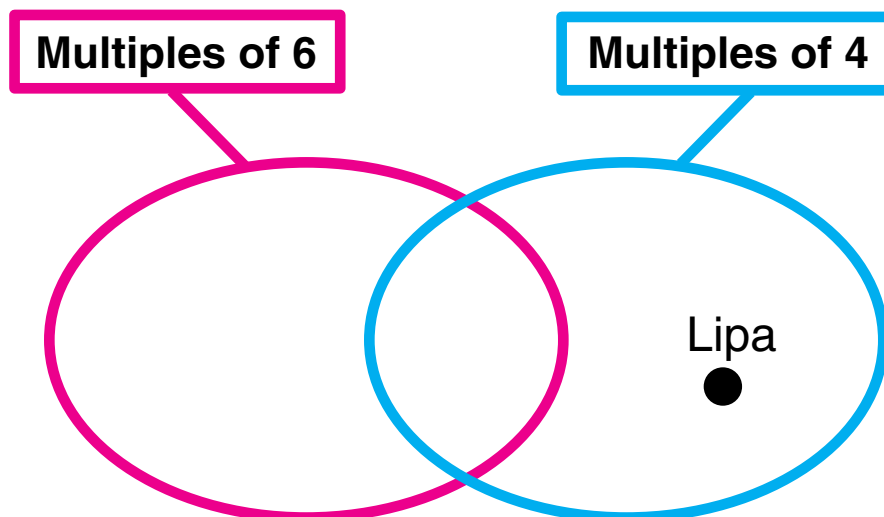
Clue 1

Lipa can be put on this Minicomputer by adding exactly one regular checker.



Lipa could be _____, _____, _____, or _____.

Clue 2



Who is Lipa? _____

Build an arrow road from 48 to 10. Each arrow must be for one of these relations.

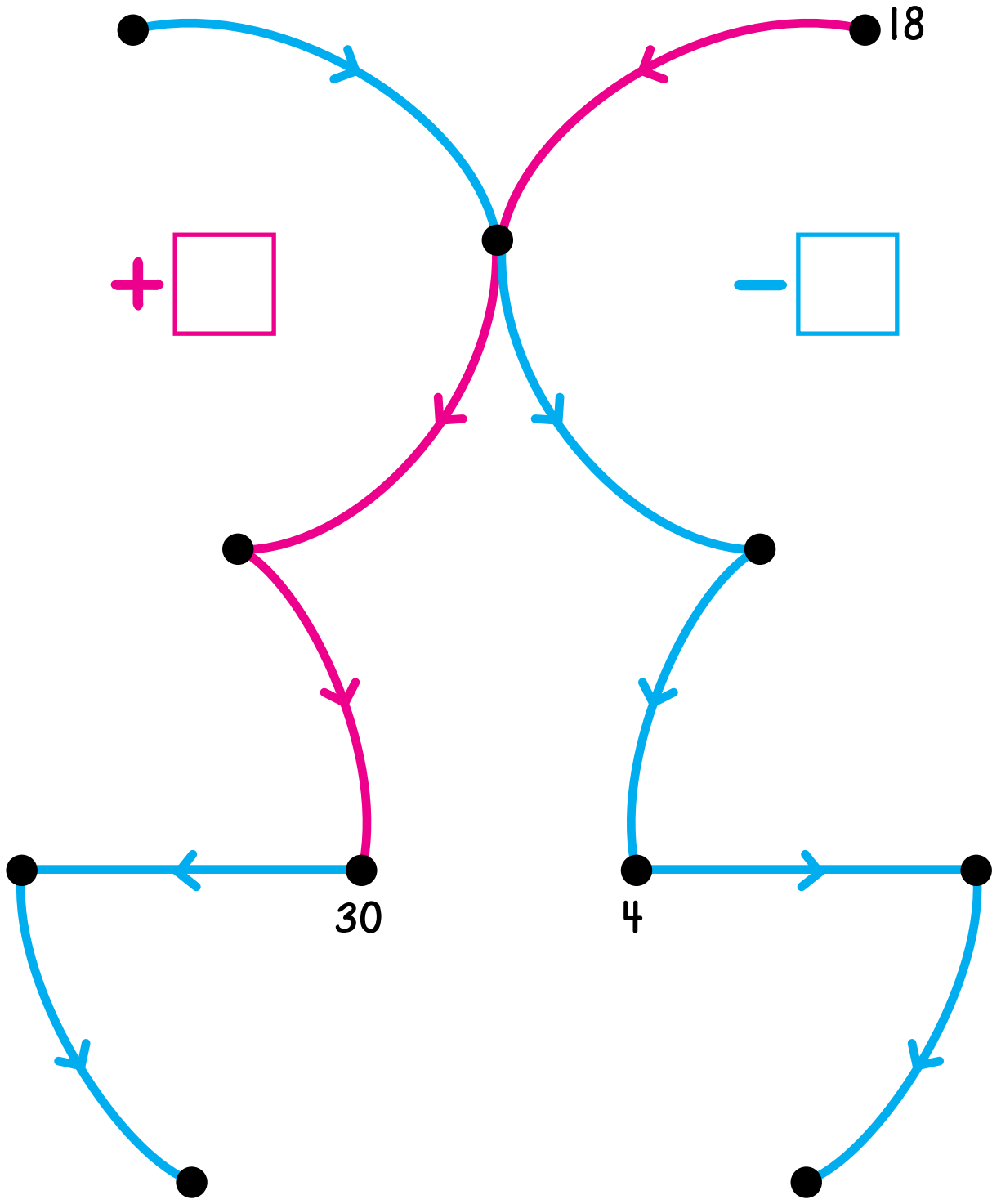
$+4$ $+6$ -4 -6 $\times 4$ $\times 6$ $\div 4$ $\div 6$

48

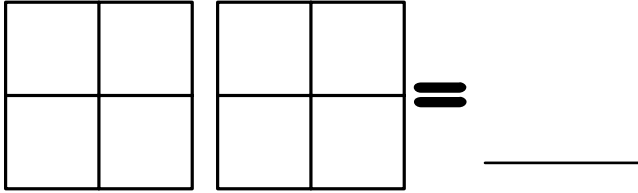


10

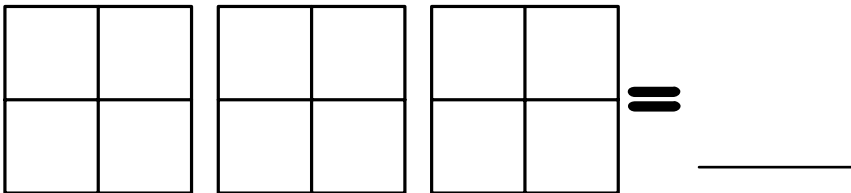
Fill in the boxes for the arrows and label the dots.



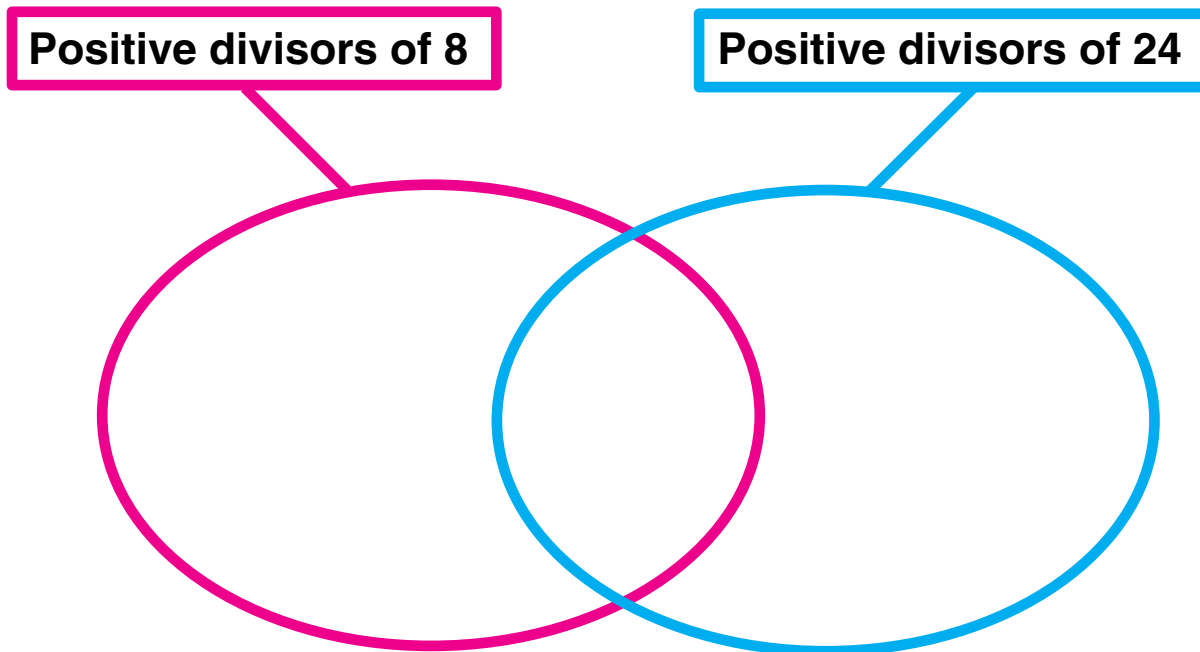
Use exactly these three checkers to put a number between 95 and 105 on this Minicomputer.



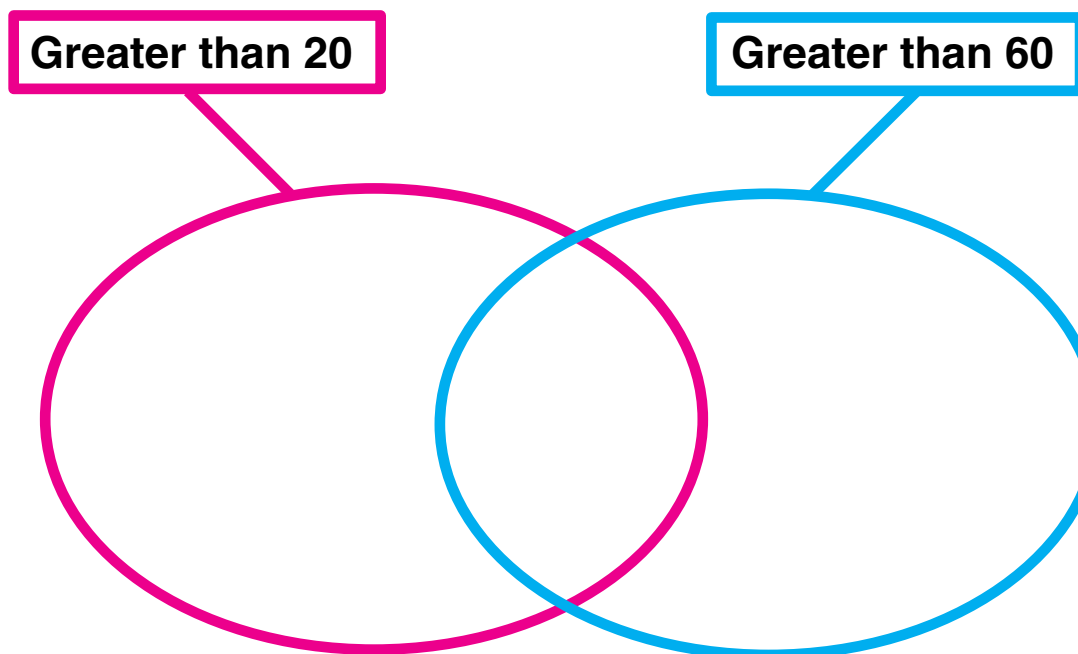
Use exactly these three checkers to put a number between 595 and 625 on this Minicomputer.



One region of this string picture can be hatched. Hatch it.



One region of this string picture can be hatched. Hatch it.



Add.

$$13.65 + 748.9 + 8.06$$

Add.

$$7.6 + 0.871 + 43$$

Subtract.

$$530.84 - 76.2$$

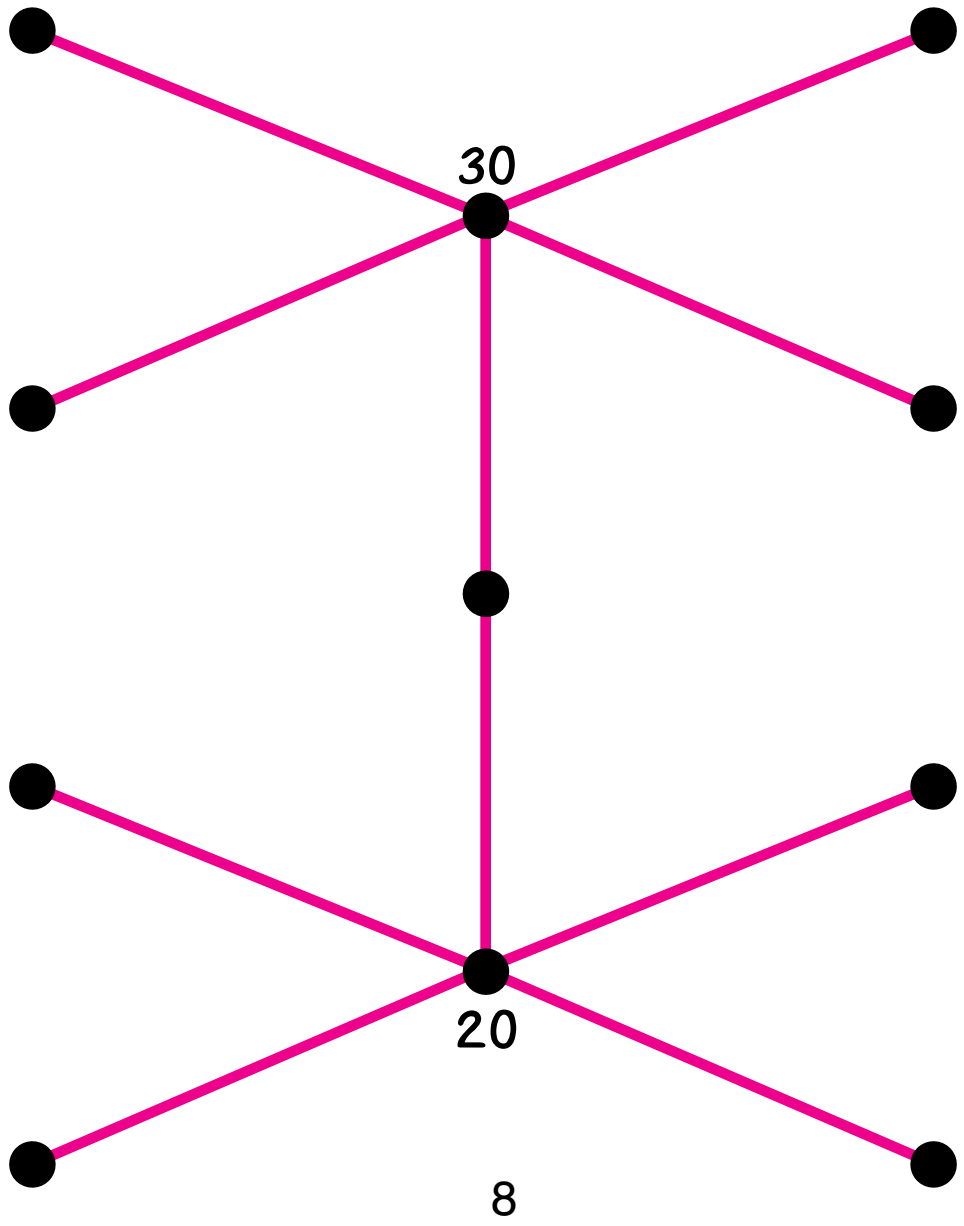
Subtract.

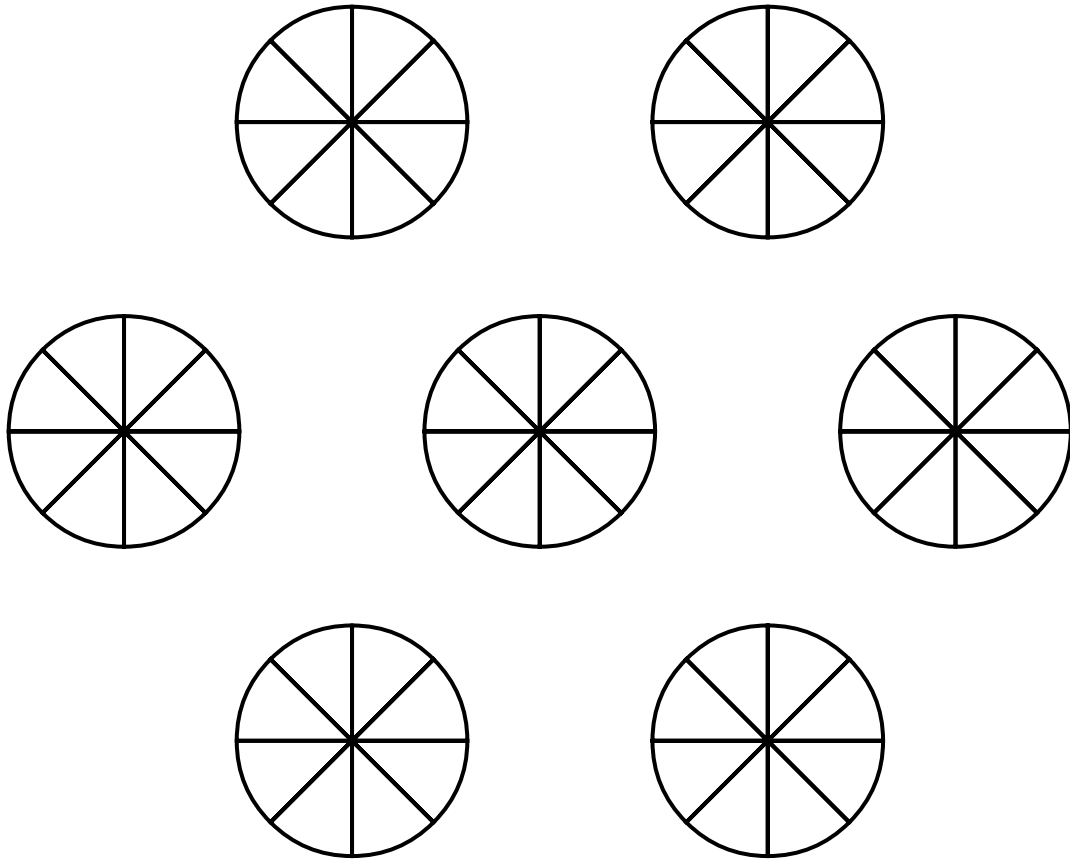
$$96.7 - 67.24$$

Label the dots so that they are all for different numbers.
Many solutions are possible.

Prime Factor Relation

Two whole numbers are joined by a red cord if and only if one of the numbers equals the other number times a positive prime number.





Complete. You may use the pictures above .

$$3\frac{5}{8} + 2\frac{7}{8} = \underline{\hspace{2cm}}$$

$$3\frac{1}{2} - \frac{3}{8} = \underline{\hspace{2cm}}$$

$$1\frac{3}{4} + \frac{7}{8} = \underline{\hspace{2cm}}$$

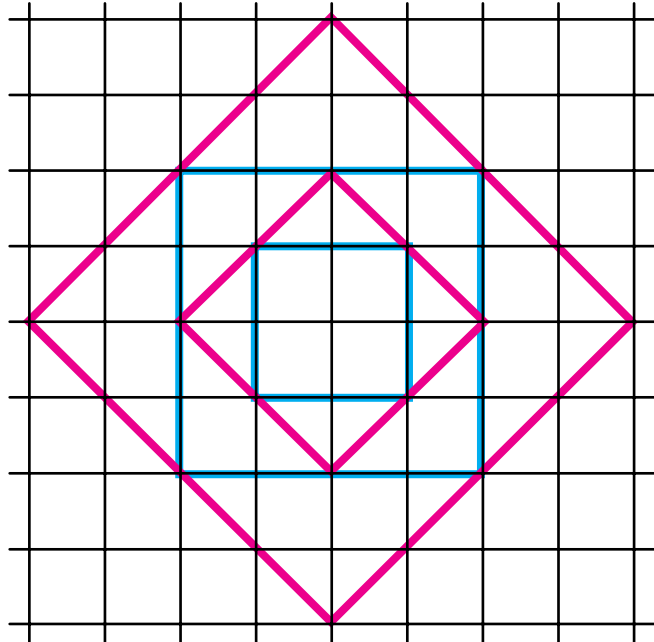
$$6 - 2\frac{5}{8} = \underline{\hspace{2cm}}$$

$$1\frac{1}{8} + 2\frac{3}{8} = \underline{\hspace{2cm}}$$

$$3\frac{1}{4} - 2\frac{1}{2} = \underline{\hspace{2cm}}$$

Find the area of each square.

Find the length of one side of each square. Use a ruler.



Square	Area (cm ²)	Length of one side (cm)
Small Blue		
Small Red		
Large Blue		
Large Red		

What pattern do you notice about the areas? _____

Does the same pattern hold for the lengths? _____

Cho is a secret whole number.

Clue 1

Cho is one of these numbers.

\square : Greatest common divisor

\sqcup : Least common multiple

$$21 \square 6 = \underline{\hspace{2cm}}$$

$$10 \sqcup 4 = \underline{\hspace{2cm}}$$

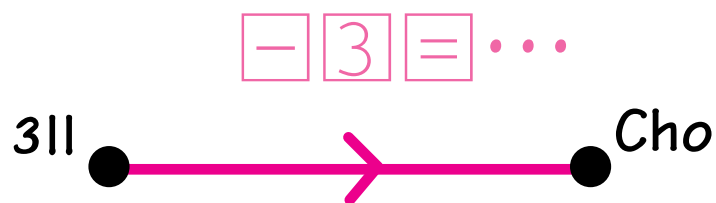
$$20 \square 9 = \underline{\hspace{2cm}}$$

$$3 \sqcup 7 = \underline{\hspace{2cm}}$$

$$14 \square 35 = \underline{\hspace{2cm}}$$

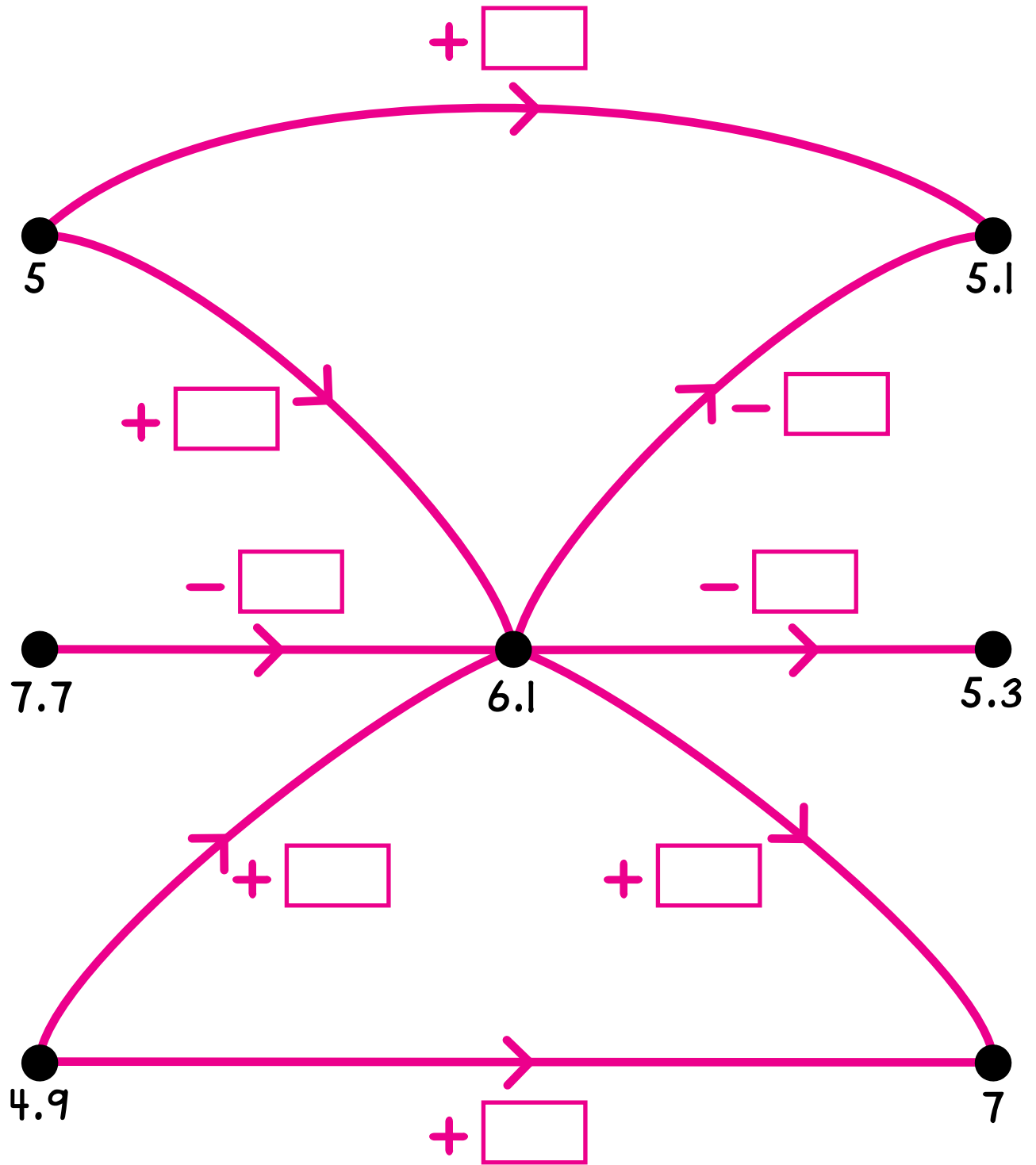
$$9 \sqcup 6 = \underline{\hspace{2cm}}$$

Clue 2

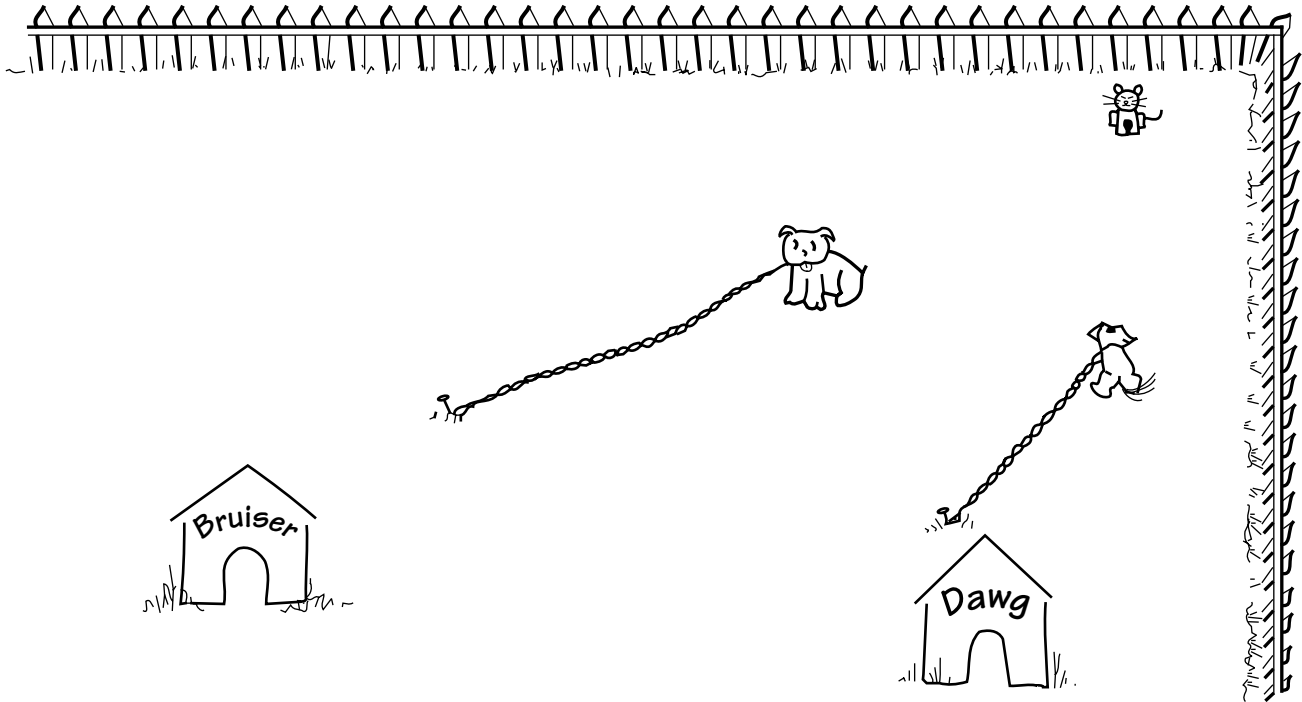


Who is Cho?

Fill in the box for each arrow.



Felix the cat enjoys taunting Bruiser and Dawg by jumping into the yard where Bruiser and Dawg can't reach him.



Scale: 1 cm = 1 m

Bruiser's chain is 5 m long and Dawg's chain is 3 m long.
Color in red the safe area for Felix in the corner of the yard.

Color in blue the area where Bruiser and Dawg could fight with each other.

Use a compass.

Complete.

$$\frac{3}{4} = \frac{\square}{16}$$

$$\frac{2}{5} = \frac{8}{\square}$$

$$\frac{3}{4} = \frac{21}{\square}$$

$$\frac{2}{5} = \frac{18}{\square}$$

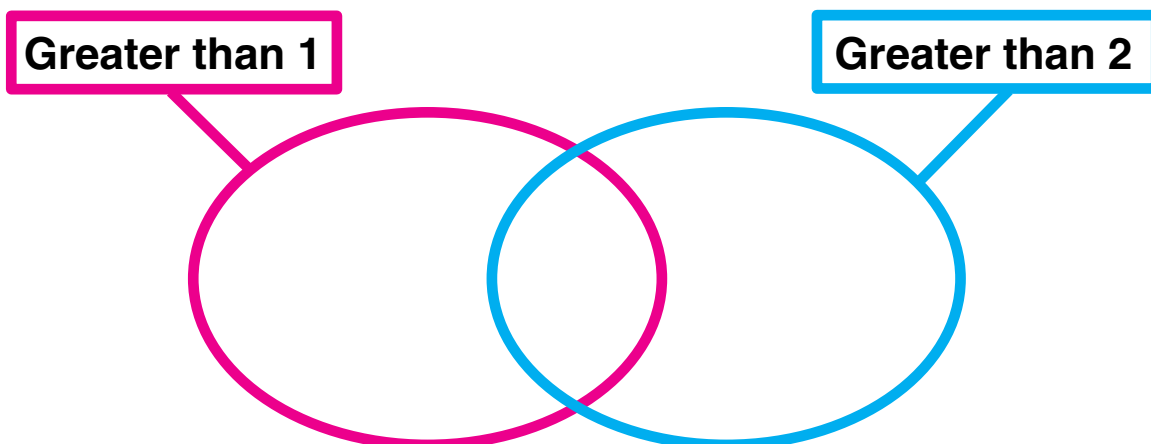
$$\frac{3}{4} = \frac{\square}{20}$$

$$\frac{2}{5} = \frac{\square}{100}$$

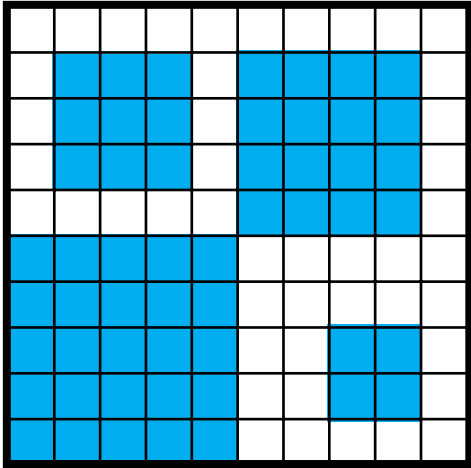
You may use the above results to add these fractions.

$$\frac{3}{4} + \frac{2}{5} = \underline{\hspace{2cm}}$$

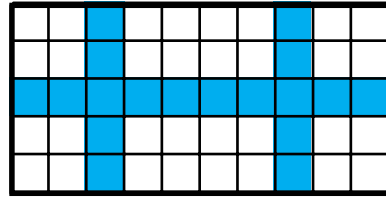
Place $\frac{3}{4} + \frac{2}{5}$ in this string picture.



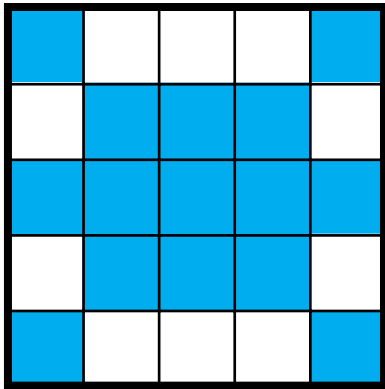
What percent of each rectangle is colored blue?



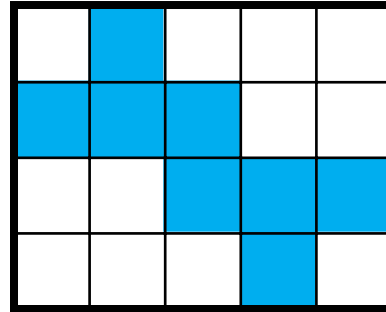
_____ %



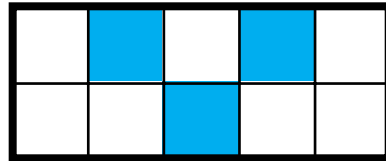
_____ %



_____ %



_____ %



_____ %



_____ %

S A L E !

Christmas Cards
\$7.50 per box
15 cards per box

Wrapping paper
\$1.80 per roll

Elena plans to send 130 Christmas cards this season.
The postage rate for first class mail is \$0.32 per card.

How many boxes of cards must Elena buy? (She cannot buy part of a box of cards.) _____

How many extra cards will Elena have? _____

Calculate the cost of the cards and the postage:

cost of cards _____

postage _____

total _____

Divide.

$$18 \overline{) 3713.4}$$

Complete.

$+$	<input type="text"/>	$178.68 \div 4 = 44.67$	$+$	<input type="text"/>
$+$	<input type="text"/>	$186.68 \div 4 =$ <input type="text"/>	$+$	<input type="text"/>
$+$	<input type="text"/>	$186.96 \div 4 =$ <input type="text"/>	$+$	<input type="text"/>
$+$	<input type="text"/>	$188.16 \div 4 =$ <input type="text"/>	$+$	<input type="text"/>

Put each of these numbers in the string picture.

0.07

0.7

1.06

0.535

$\frac{1}{3}$

$\frac{1}{5}$

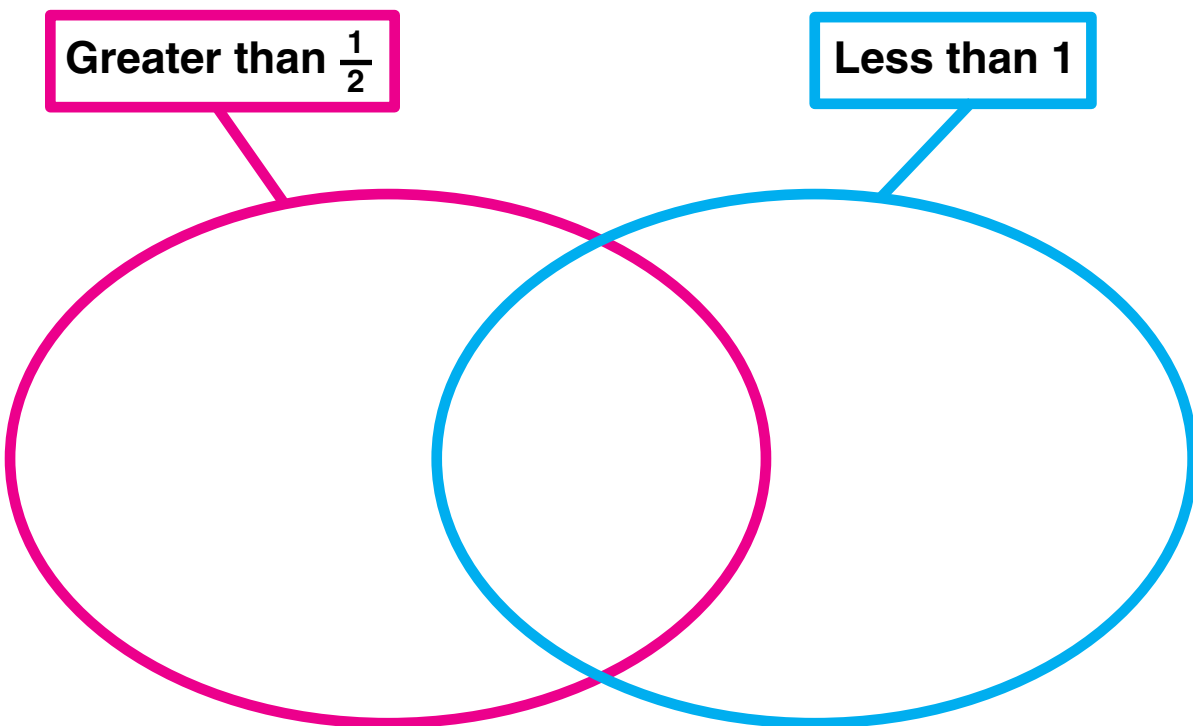
$\frac{5}{6}$

$\frac{5}{8}$

$\frac{3}{7}$

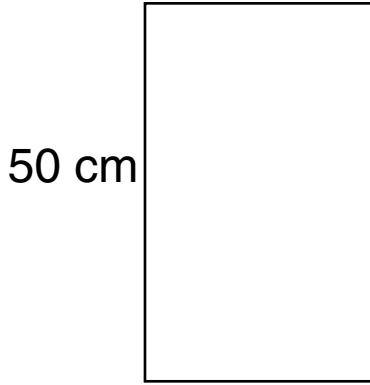
$\frac{8}{5}$

$\frac{7}{3}$



Pizza
Bob's

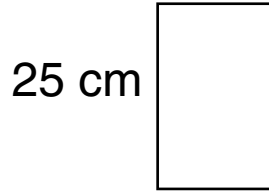
30 cm



\$8

Pico
Pizza

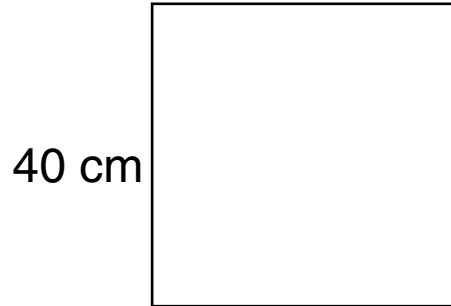
15 cm



\$2.50

Mama's
Pizza

40 cm



\$8

The picture above shows the size and price of a sausage pizza at each of three places. Find the area of each pizza.

Pizza Bob's _____ cm^2

Pico Pizza _____ cm^2

Mama's Pizza _____ cm^2

Which pizza is the best buy? _____

Explain your answer. _____

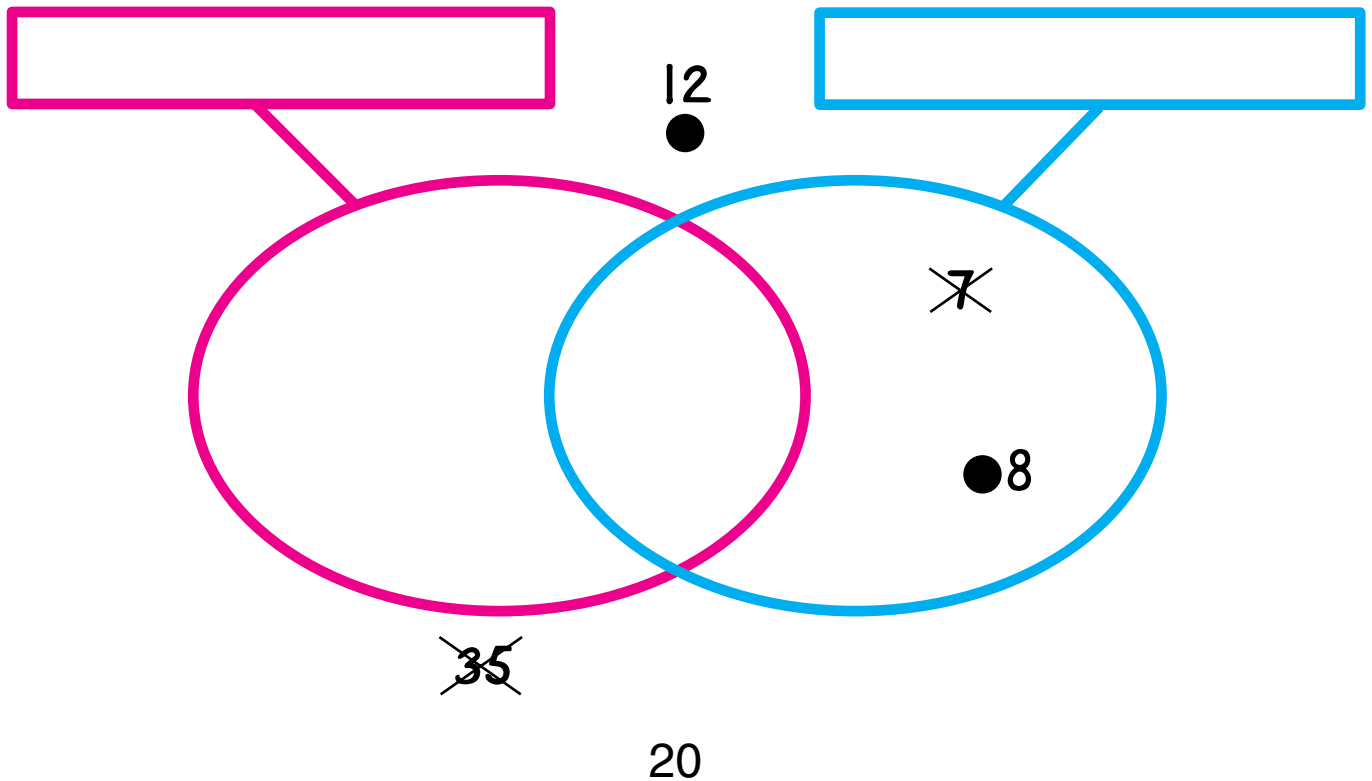
The red label is one of these:

The blue label is one of these:

Multiples of 2
Multiples of 3
Multiples of 5
Odd numbers
Positive prime numbers
Less than 10
Positive divisors of 24

Multiples of 2
Multiples of 3
Multiples of 5
Odd numbers
Positive prime numbers
Less than 10
Positive divisors of 24

Label the strings.



$$a * b = (2 \times a) + b$$

Example: $5 * 3 = (2 \times 5) + 3 = 13$

Complete.

$7 * 4 = \square$

$0.7 * 4 = \square$

$\widehat{8} * 10 = \square$

$35 * \widehat{4} = \square$

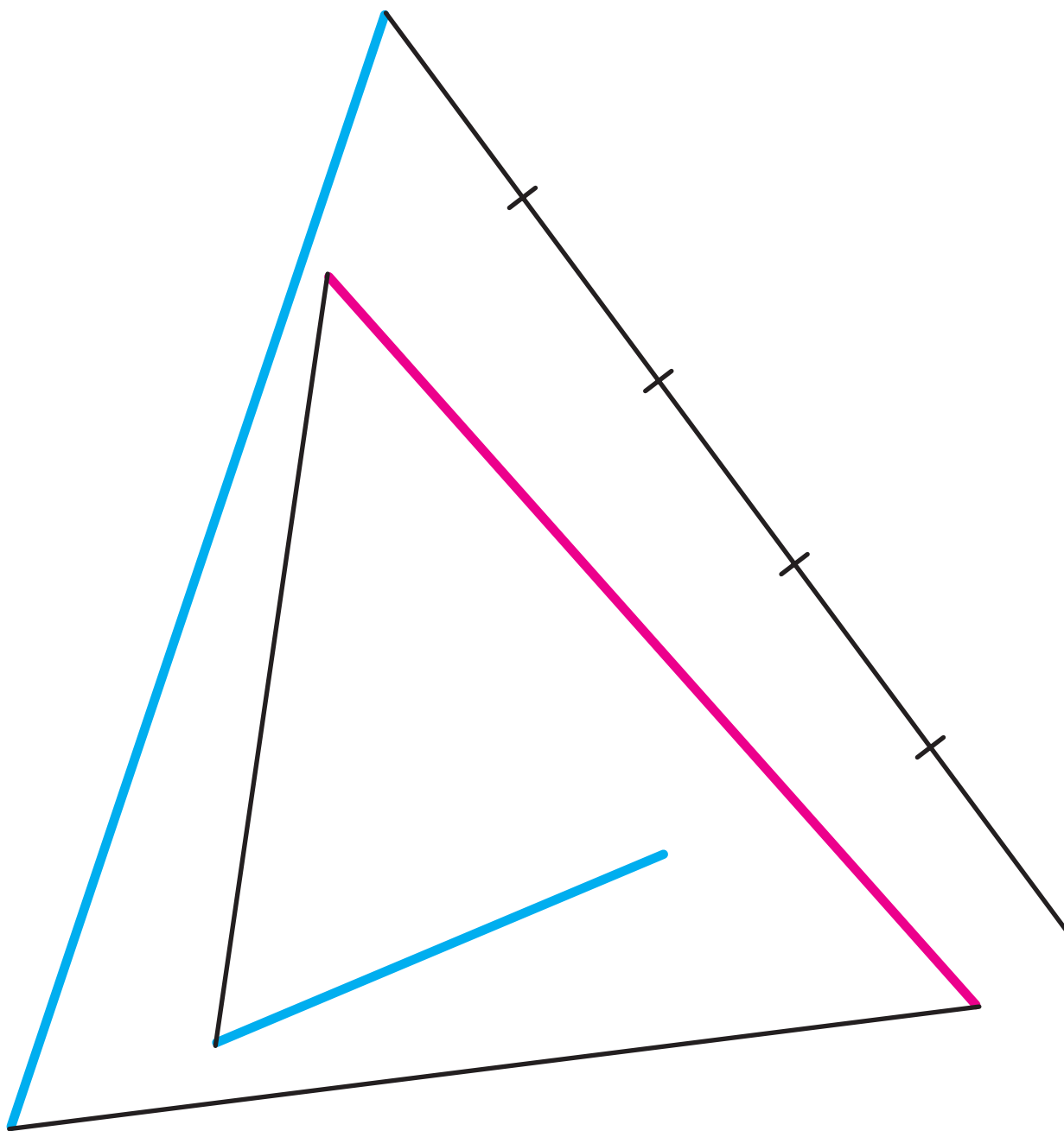
$6 * \square = 15$

$19 * \square = 35$


$\square * \widehat{5} = 21$

$\square * 6 = 21.2$

Using a ruler, divide the red segment into two pieces of equal length.
Divide each blue segment into three pieces of equal length.
Divide each black segment into five pieces of equal length.
One segment is done for you.



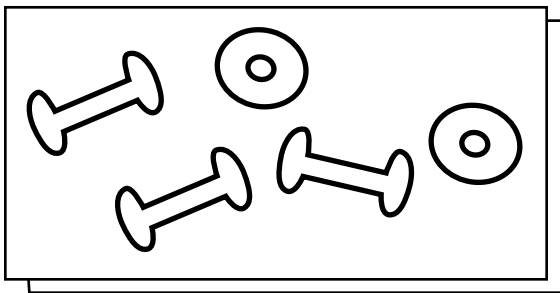
Bonnie and Clyde have two types of weights.

Barbells () all have the same weight.

Donuts () all have the same weight.

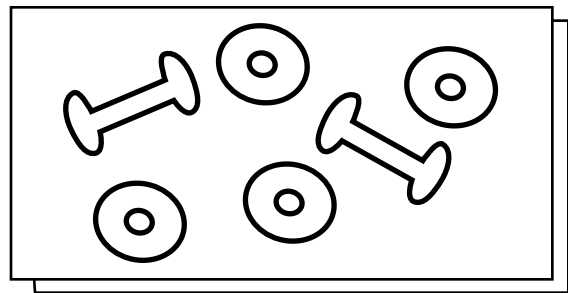
They are not sure how much each type weighs.

Bonnie found that three barbells and two donuts weigh 12 pounds.



12 pounds

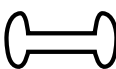
Clyde found that four donuts and two barbells weigh 12 pounds.




12 pounds

Which type of weight is heavier? _____

Find the weights of some different combinations.

How much does a barbell () weigh? _____

How much does a donut () weigh? _____

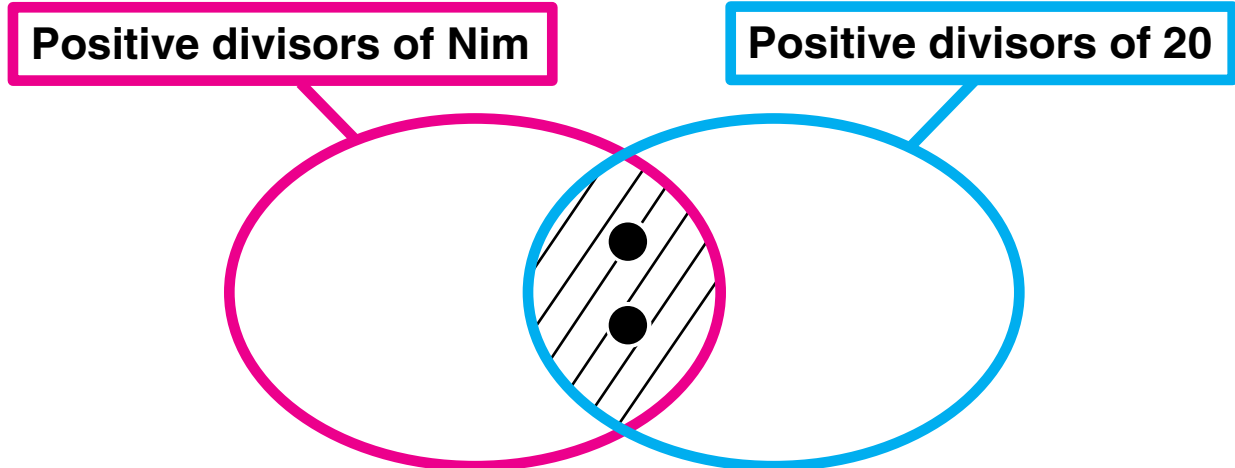
Nim is a secret whole number.

Clue 1

$$\text{Nim} \square 10 = 30$$

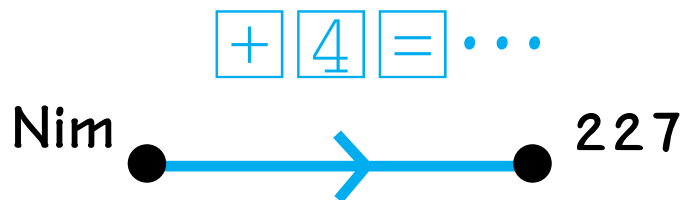
Nim could be _____, _____, _____, or _____.

Clue 2



Nim could be _____ or _____.

Clue 3

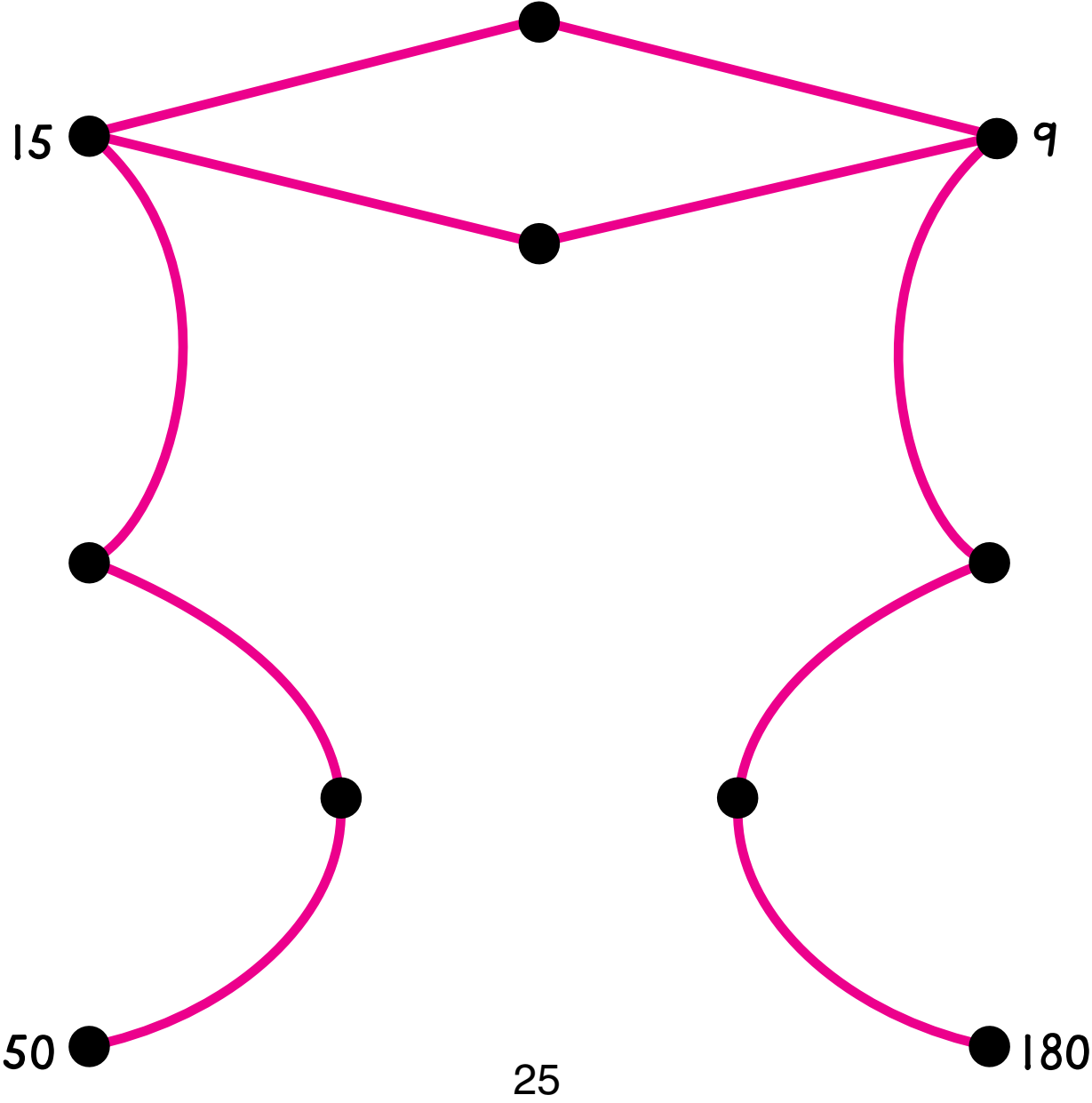


Who is Nim? _____

Label the dots so that they are all for different numbers.
Many solutions are possible.

Prime Factor Relation

Two whole numbers are joined by a red cord if and only if one of the numbers equals the other number times a positive prime number.



Label the dots. Some of the numbers have two names listed.
Write both names for those numbers beside their dots.

$6 \div 9$

3×0.6

0.5×1.2

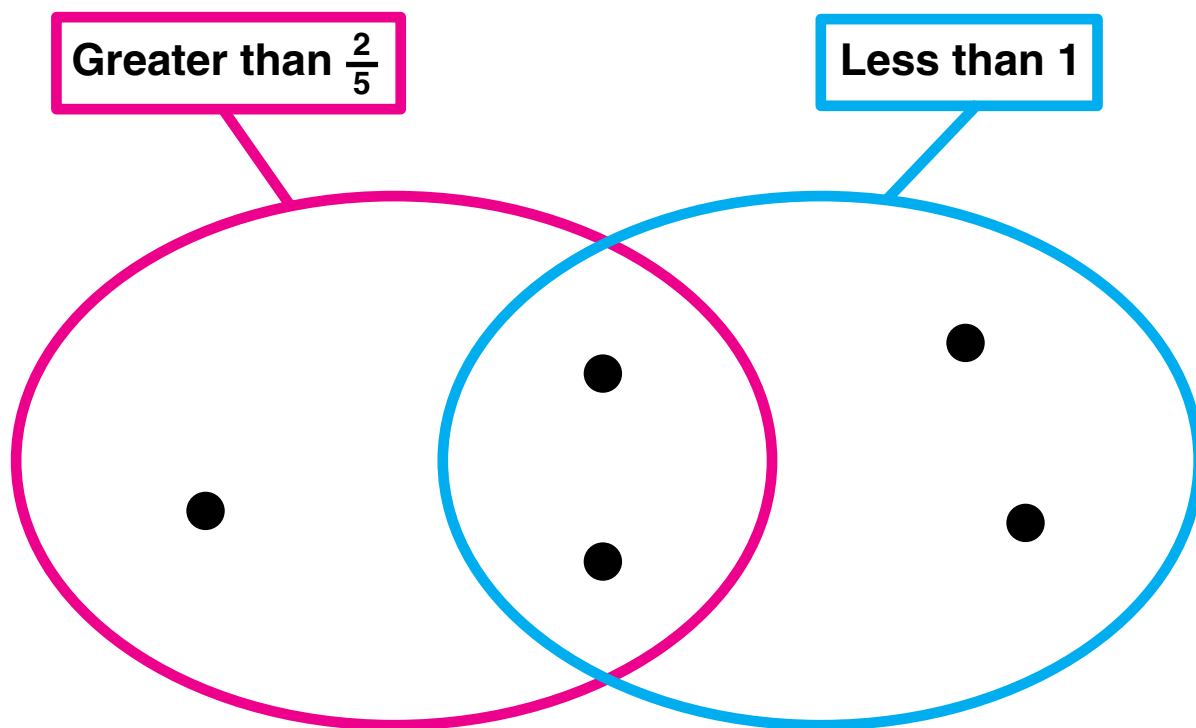
$1.8 - 1.43$

$\frac{1}{10} + \frac{1}{2}$

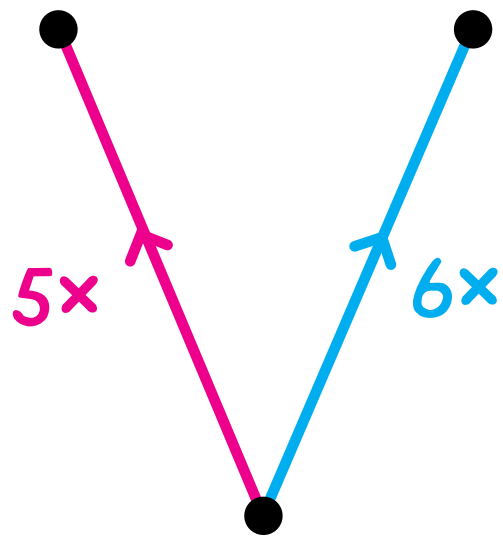
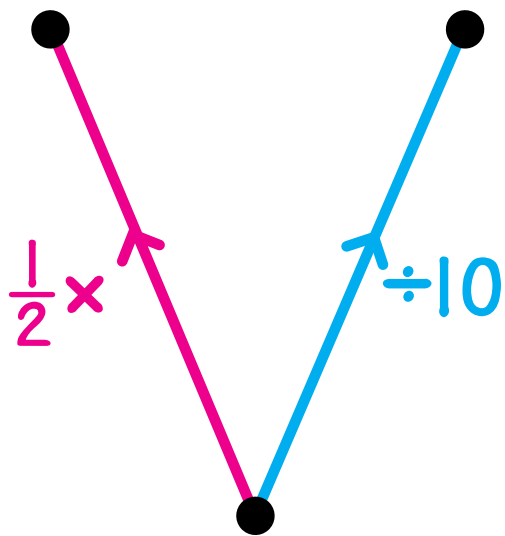
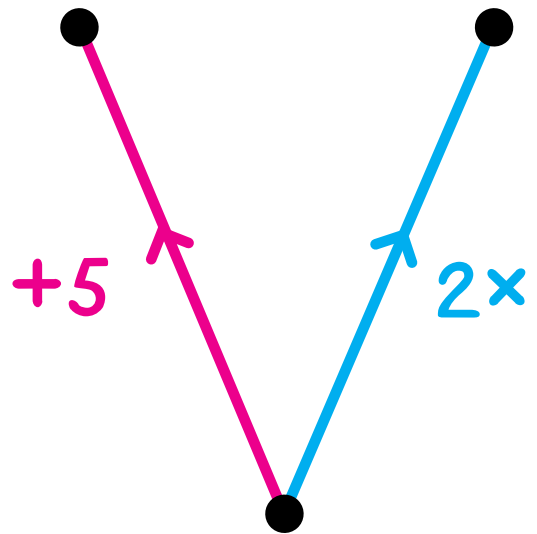
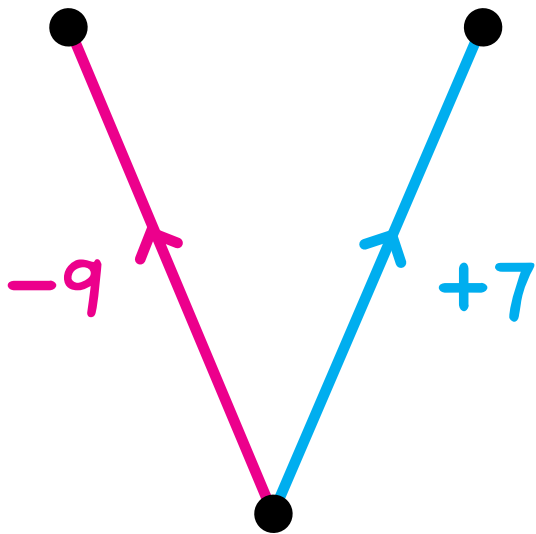
$2 - \frac{1}{5}$

$\frac{3}{4} \times \frac{1}{3}$

$\frac{2}{5} \times \frac{5}{3}$



3 is the greatest number in each picture. Label the dots.

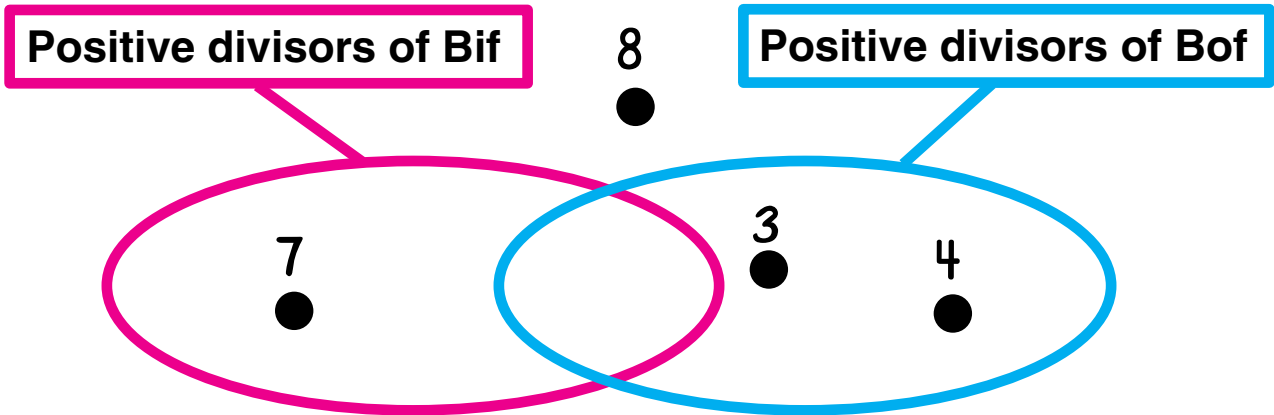


Bif and Bof are secret whole numbers.

Clue 1

Bif is less than 50 and Bof is less than 100.

Clue 2



Bif could be _____, _____, _____, or _____.

Bof could be _____, _____, or _____.

Clue 3

Bif + Bof is a multiple of 5.

(Bif, Bof) could be (____, ____), (____, ____), or (____, ____).

Clue 4

$$\text{Bif} \square \text{Bof} = 1$$

Who is Bif? _____

Who is Bof? _____

Put each number on the Minicomputer with exactly these two checkers.

⑥

⑦

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \parallel \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 38$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \parallel \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 17.6$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \parallel \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 3.4$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \parallel \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 6.2$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \parallel \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 8$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \parallel \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 11.8$$

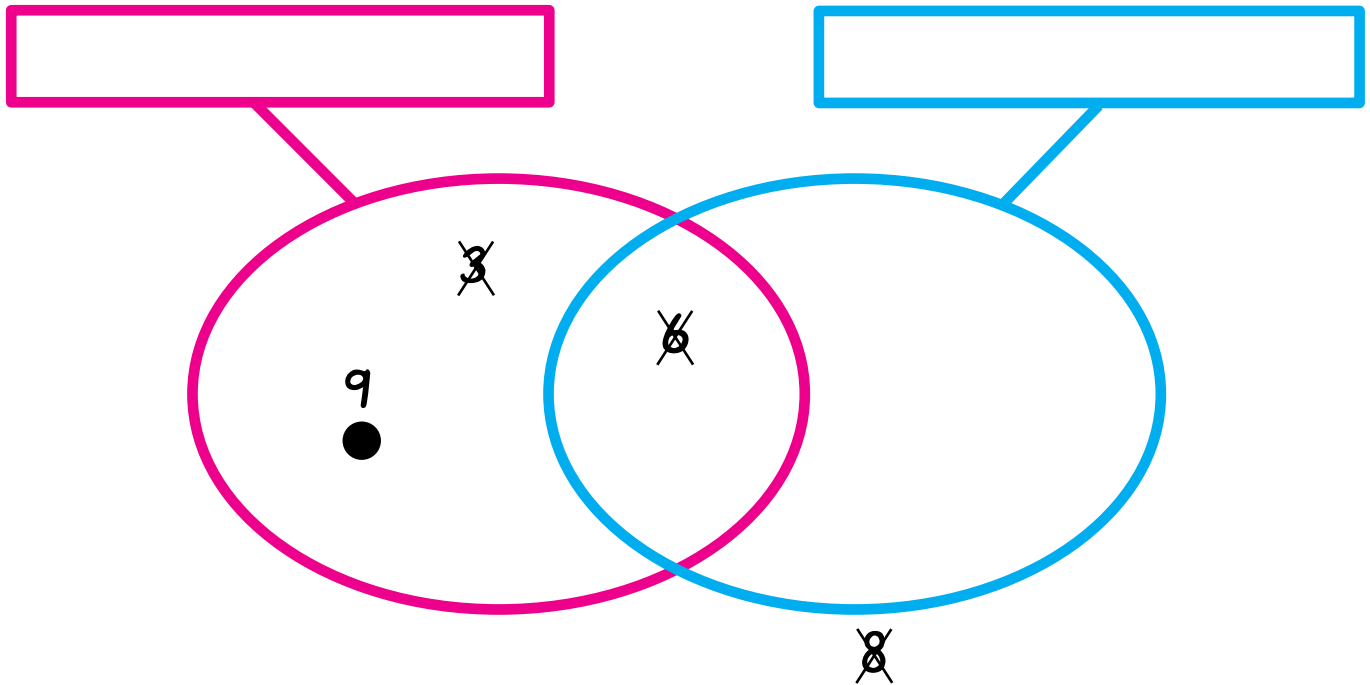
The red label is one of these:

The blue label is one of these:

Multiples of 4
Odd numbers
Less than 10
Positive divisors of 12
Positive divisors of 18
Positive divisors of 24

Multiples of 4
Odd numbers
Less than 10
Positive divisors of 12
Positive divisors of 18
Positive divisors of 24

Label the strings.



Prof is a whole number less than 100.

The prime factor distance from 12 to Prof is 2.

$$\text{pfd}(12, \text{Prof}) = 2$$

prime factor relation

●
12

Prof could be _____, _____, _____, _____, _____, _____, _____, _____,
_____, _____, _____, _____, _____, _____, _____, or _____.

66 1 20 512 1000
 $\frac{3}{10}$ $\frac{8}{9}$ $\frac{11}{3}$ 0.25
0 0.2 1.5 $\widehat{5}$ $\widehat{12}$

Names for the above numbers can be written using just these symbols:

2 3 + - × ÷ ()

For each number, use 2 and 3 exactly twice and the other symbols as often as you wish.

Example: $2^{(3+3)} + 2 = 2^6 + 2 = 64 + 2 = 66$

Write names for eight of the above numbers.

_____	_____
_____	_____
_____	_____
_____	_____