

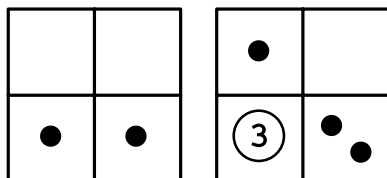
Name _____

Arcade of Problems #6

Yip is a secret number.

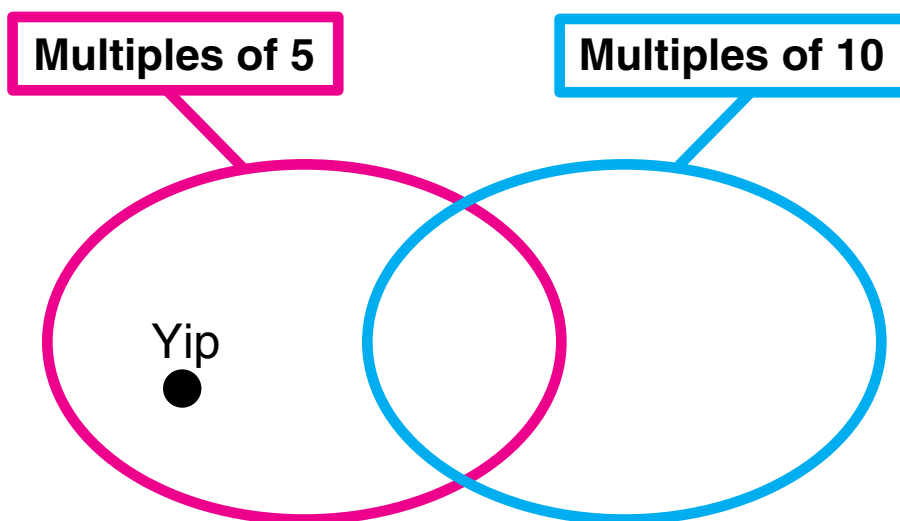
Clue 1

Yip can be put on this Minicomputer by taking off exactly one checker.



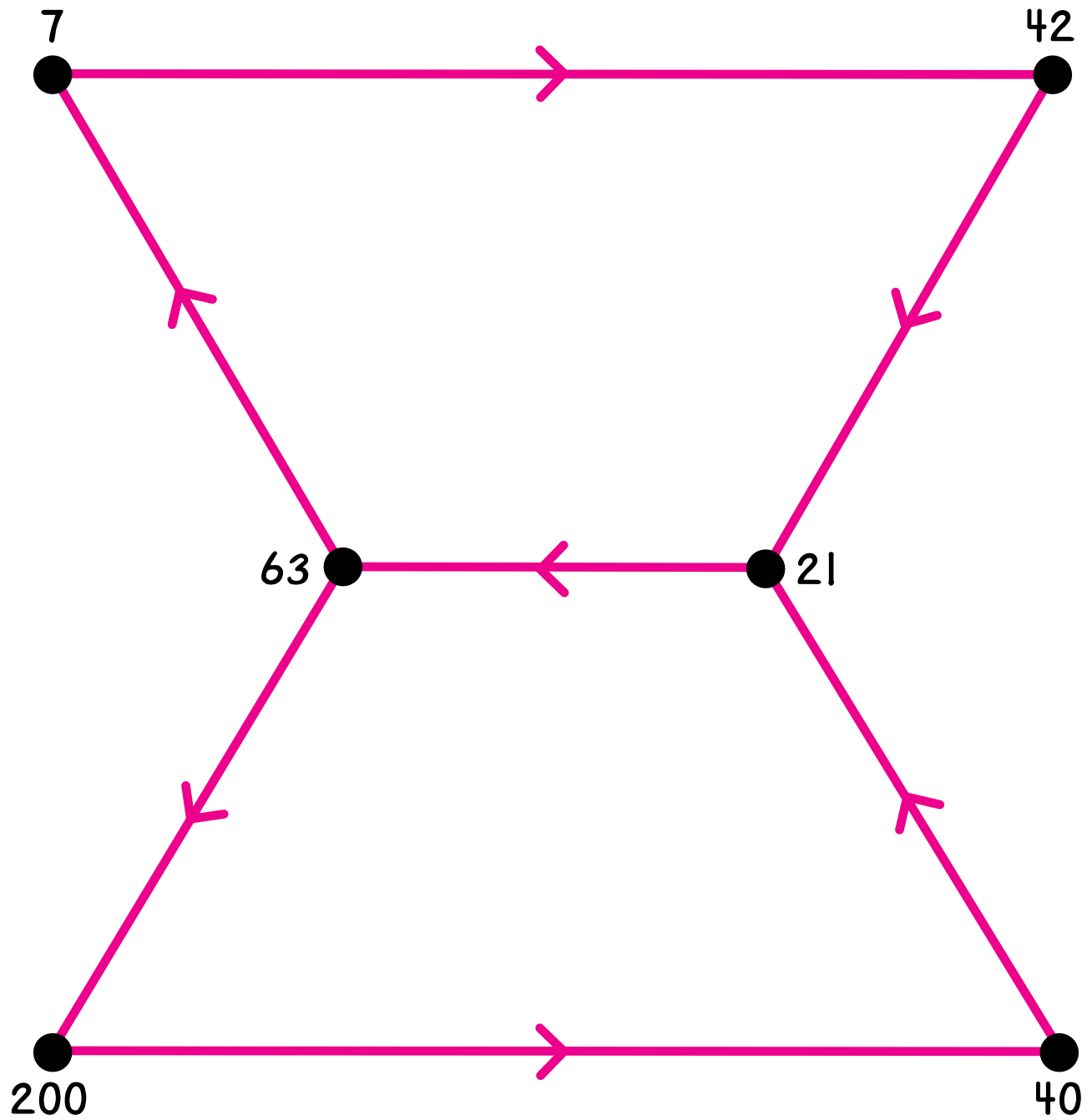
Yip could be _____, _____, _____, _____, or _____.

Clue 2



Who is Yip? _____

Label the red arrows; try to label some arrows in two ways.
Many solutions are possible.



Build an arrow road from 6 to 35. Each arrow must be for one of these relations.

$+2$ $+7$ -2 -7 $\times 2$ $\times 7$ $\div 2$ $\div 7$

6



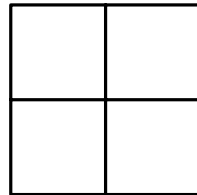
35



Nama is a secret number.

Clue 1

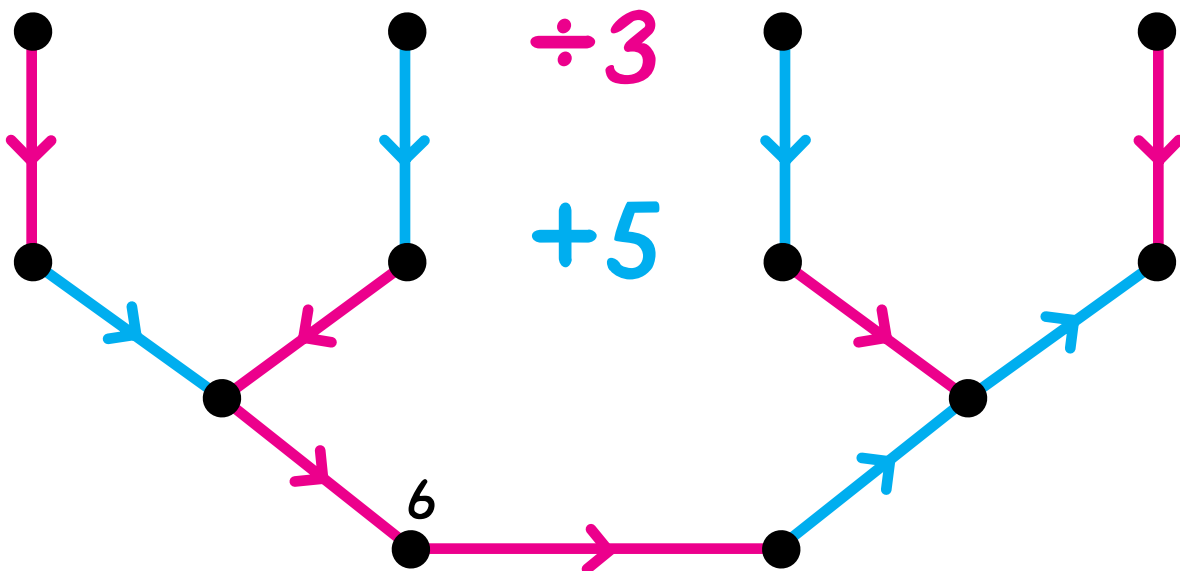
Nama is greater than 30 and can be put on this Minicomputer with exactly these two checkers: ● and ⑥.



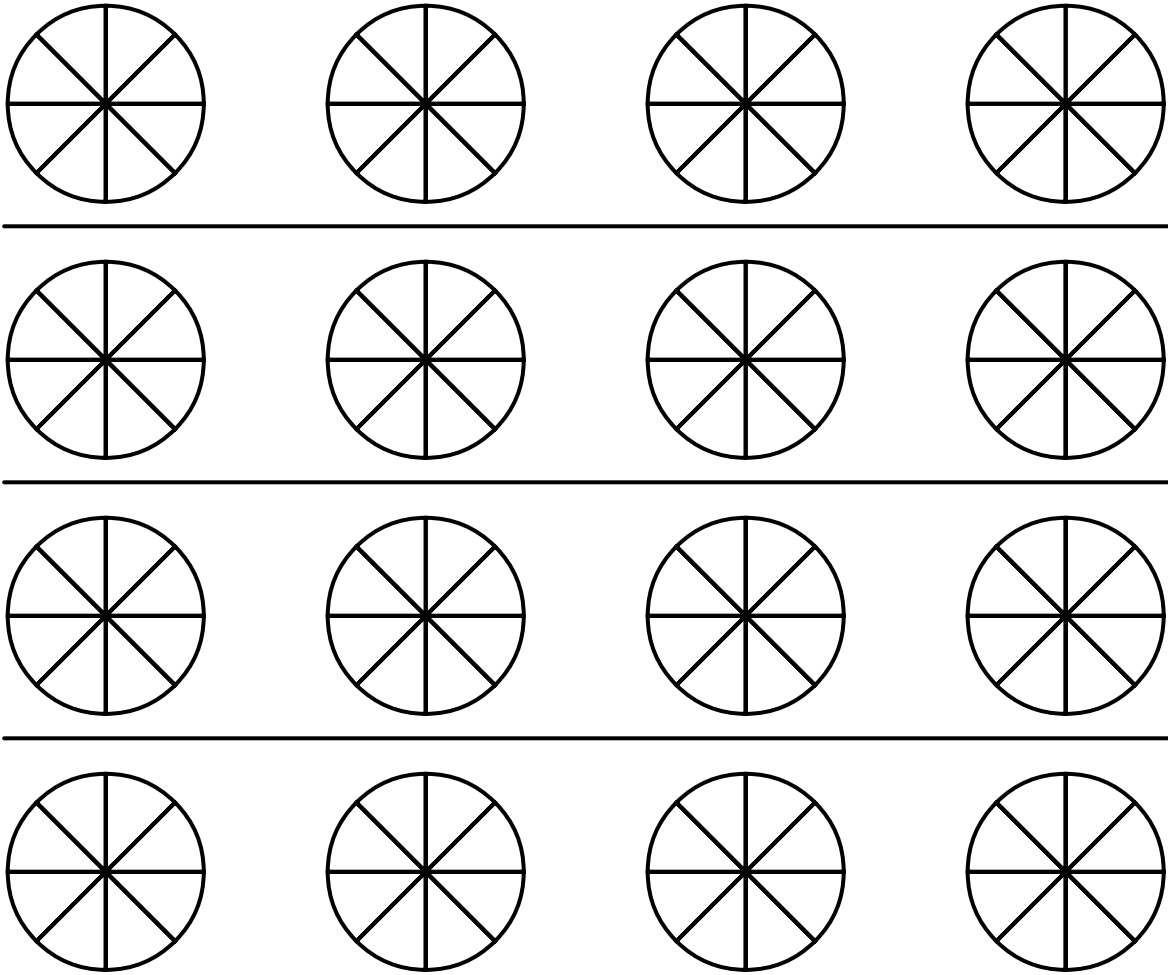
Nama could be _____, _____, _____, _____, or _____.

Clue 2

Nama is in this arrow picture.



Who is Nama? _____



Complete the sentences below. You may use the pictures above to help you.

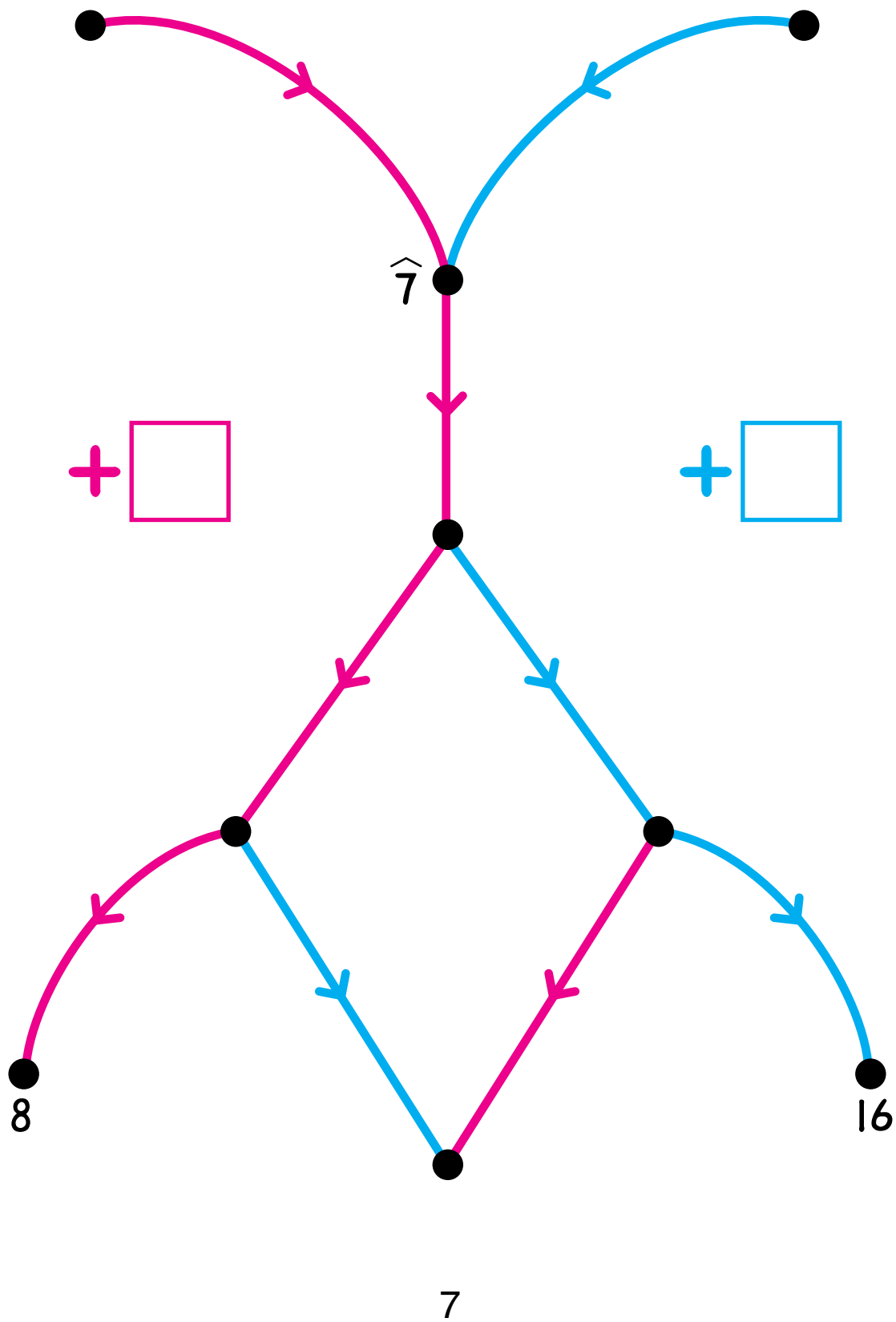
$$1\frac{1}{2} + \frac{3}{4} = \underline{\hspace{2cm}}$$

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

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

$$3\frac{5}{8} - 2\frac{3}{4} = \underline{\hspace{2cm}}$$

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



Put a one-digit number in each box to make the calculations correct.

$$\begin{array}{r}
 \square 56 \\
 62 \square 7 \\
 + \quad 83 \\
 \hline
 \square 89 \square
 \end{array}$$

$$\begin{array}{r}
 426 \square \\
 - \square 73 \\
 \hline
 \square 8 \square 6
 \end{array}$$

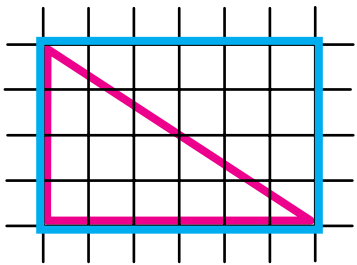
Add.

$$58 + 3009 + 270 + 1068$$

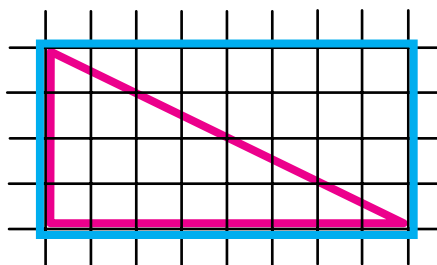
Divide.

$$17 \overline{) 3485}$$

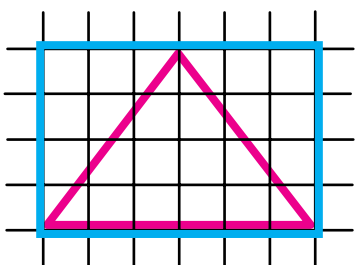
Assume each small square (\square) has area 1.
 Find the areas of the blue rectangles and the red triangles below.



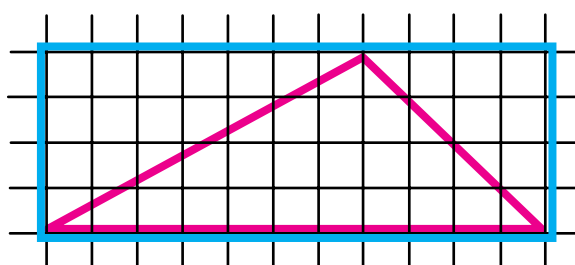
Area of rectangle = _____
 Area of triangle = _____



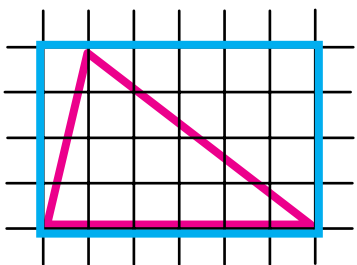
Area of rectangle = _____
 Area of triangle = _____



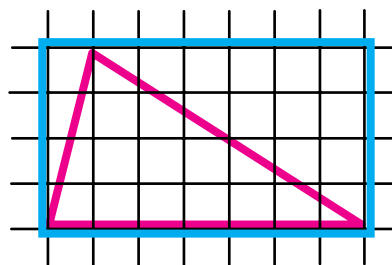
Area of rectangle = _____
 Area of triangle = _____



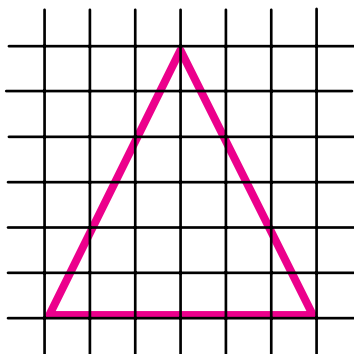
Area of rectangle = _____
 Area of triangle = _____



Area of rectangle = _____
 Area of triangle = _____



Area of rectangle = _____
 Area of triangle = _____



Area of triangle = _____

Booker's bakery sells big cookies at 4 for \$1.80.

Mr. Booker is making a chart with the prices for different numbers of cookies. Each cookie costs the same regardless of quantity. Complete this chart for Mr. Booker. Round prices to the nearest penny.

Number of Cookies	Price
1	
2	
3	
4	\$1.80
5	
($\frac{1}{2}$ dozen) 6	
7	
8	
9	
10	
11	
(dozen) 12	

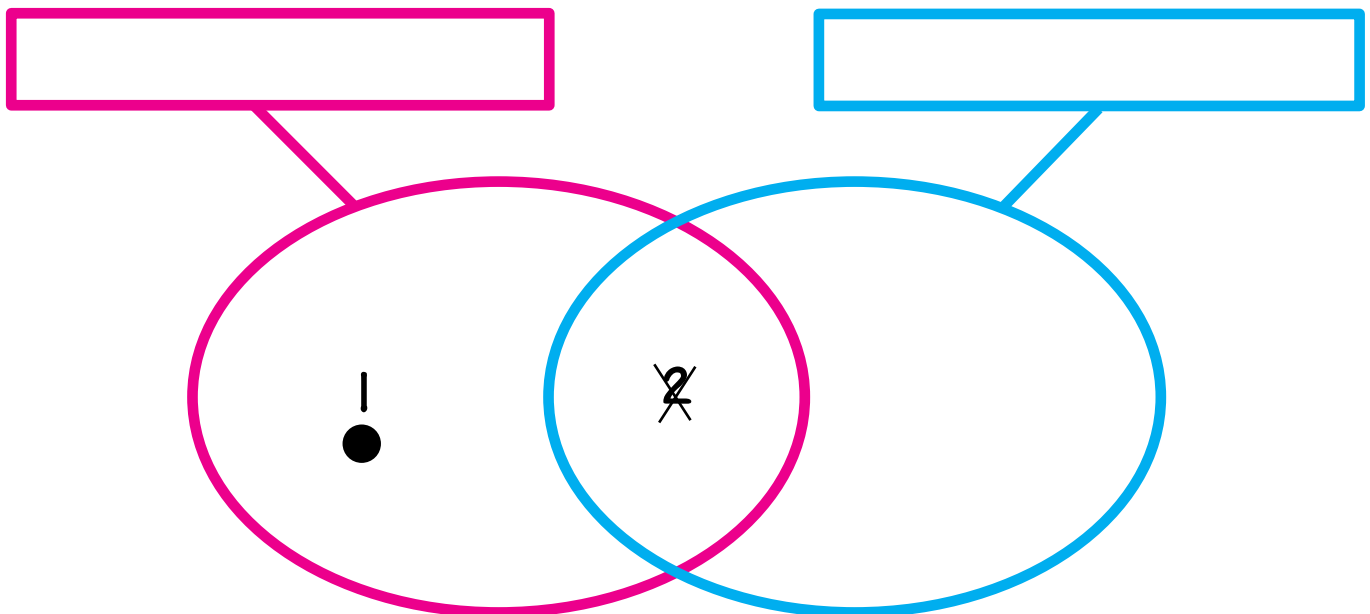
The red label is one of these:

Multiples of 2
Odd numbers
Greater than $\widehat{10}$
Positive divisors of 12
Positive divisors of 18
Positive divisors of 20

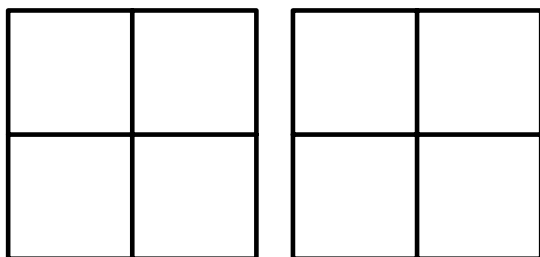
The blue label is one of these:

Multiples of 2
Odd numbers
Greater than $\widehat{10}$
Positive divisors of 12
Positive divisors of 18
Positive divisors of 20

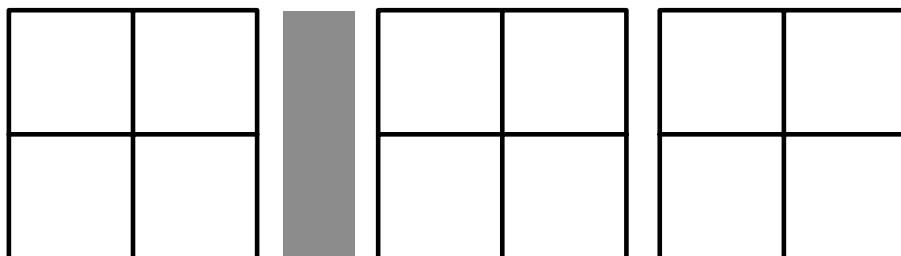
Label the strings.



Use exactly these three checkers to put on a number between 185 and 195.



Use exactly these three checkers to put on a number between 1 and 2.



Build an arrow road between 5 and 6.1 using +0.4 and -0.3 arrows

+0.4

-0.3

6.1

5

Add.

$$2.309 + 23.49 + 974.2$$

Subtract.

$$33 - 3.889$$

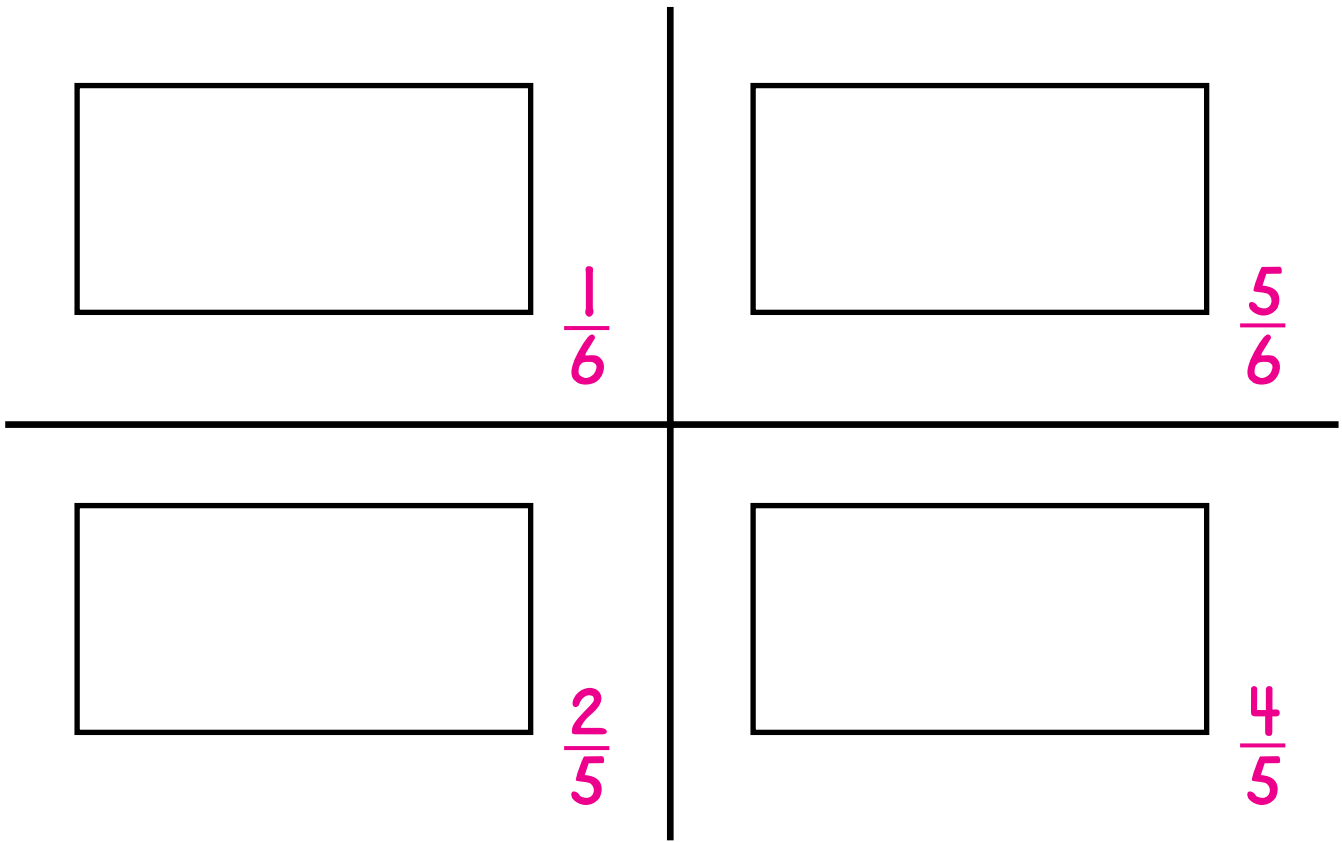
Add.

$$3.1417 + 45.426 + 9.21 + 20$$

Subtract.

$$6.003 - 2.97$$

Color in red the indicated fractional part of each rectangle.
Use a ruler to divide the rectangles.



Draw all of the possible red arrows between these dots.

$\frac{1}{6} \bullet$

$\bullet \frac{5}{6}$

is less than



$\frac{2}{5} \bullet$

$\bullet \frac{4}{5}$

Mr. Mueller bought five sections of fence all the same length to make a pen for his dog. When he finished putting the fence together, he had a very unusual looking dog pen.

Use your compass to show what his dog pen could look like. Make all sections of the fence this same length.



Put these numbers in the string picture.

0.09

2.01

0.87

0.315

$\frac{1}{6}$

$\frac{4}{6}$

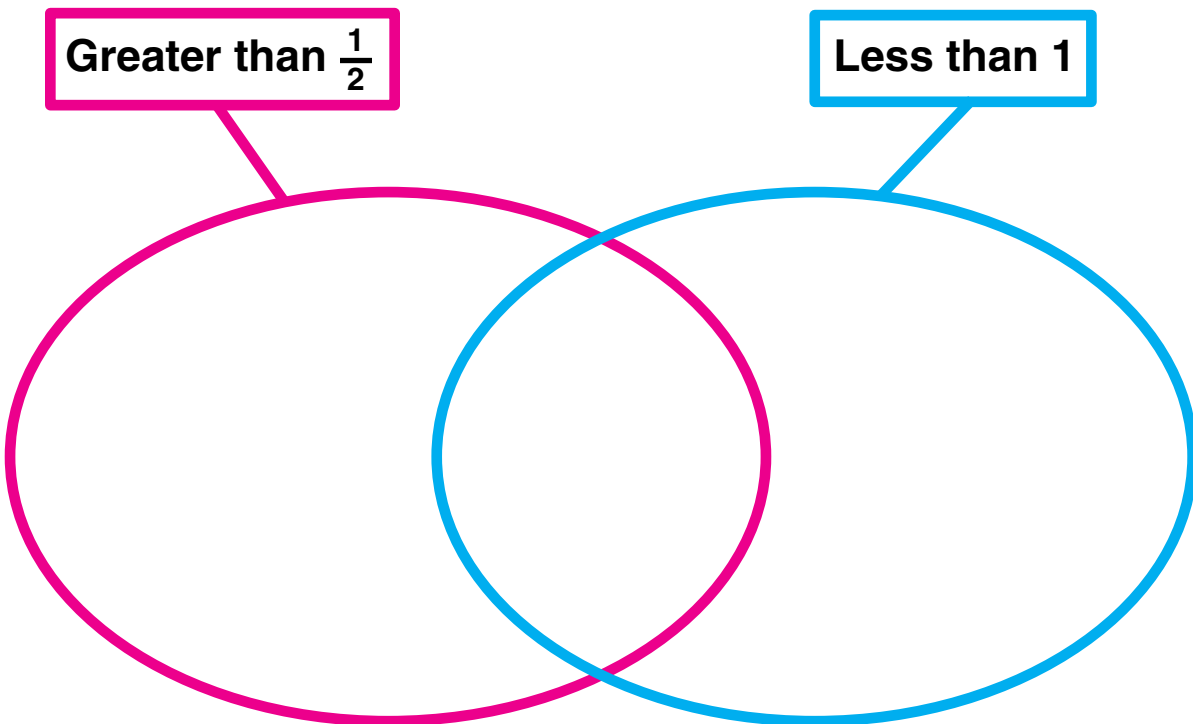
$\frac{11}{6}$

$\frac{4}{3}$

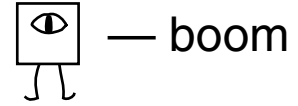
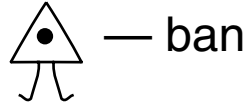
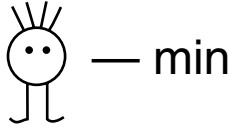
$\frac{4}{5}$

$\frac{4}{7}$

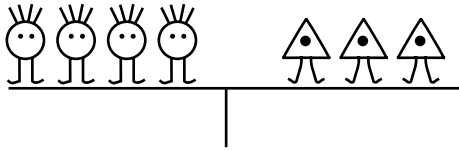
$\frac{4}{9}$



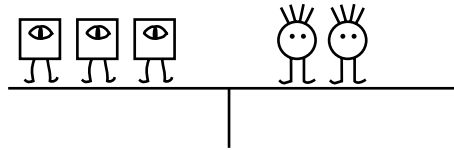
On the planet of Arf, the inhabitants like to play on a teeter-totter.



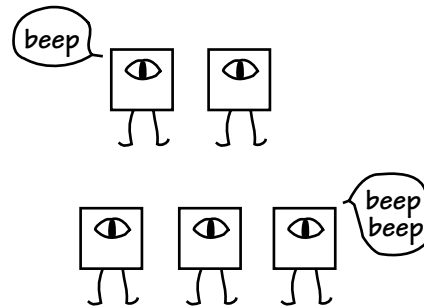
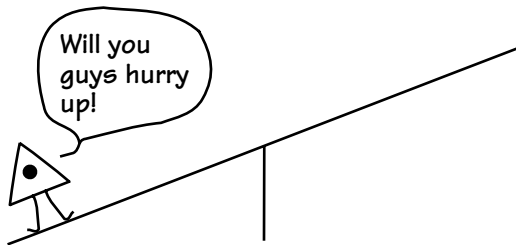
4 mins balance 3 bans



3 booms balance 2 mins



How many booms will balance 1 ban? _____



A mail order catalog has the following additional charges for shipping and handling of purchases.



How much is the shipping and handling on a purchase of:

\$75? _____ \$63? _____ \$110? _____ \$178? _____

Ms. Carr paid \$8.00 shipping and handling on her order. What is the most her total bill could have been including shipping and handling? _____

Mr. Hansen has selected two items to order from the catalog. One item costs \$20 and the other item costs \$95. How much can Mr. Hansen save by ordering both items together as one purchase rather than as two purchases? _____

Label the dots on the number line with these numbers.

$$\frac{1}{2}$$

$$\frac{3}{2}$$

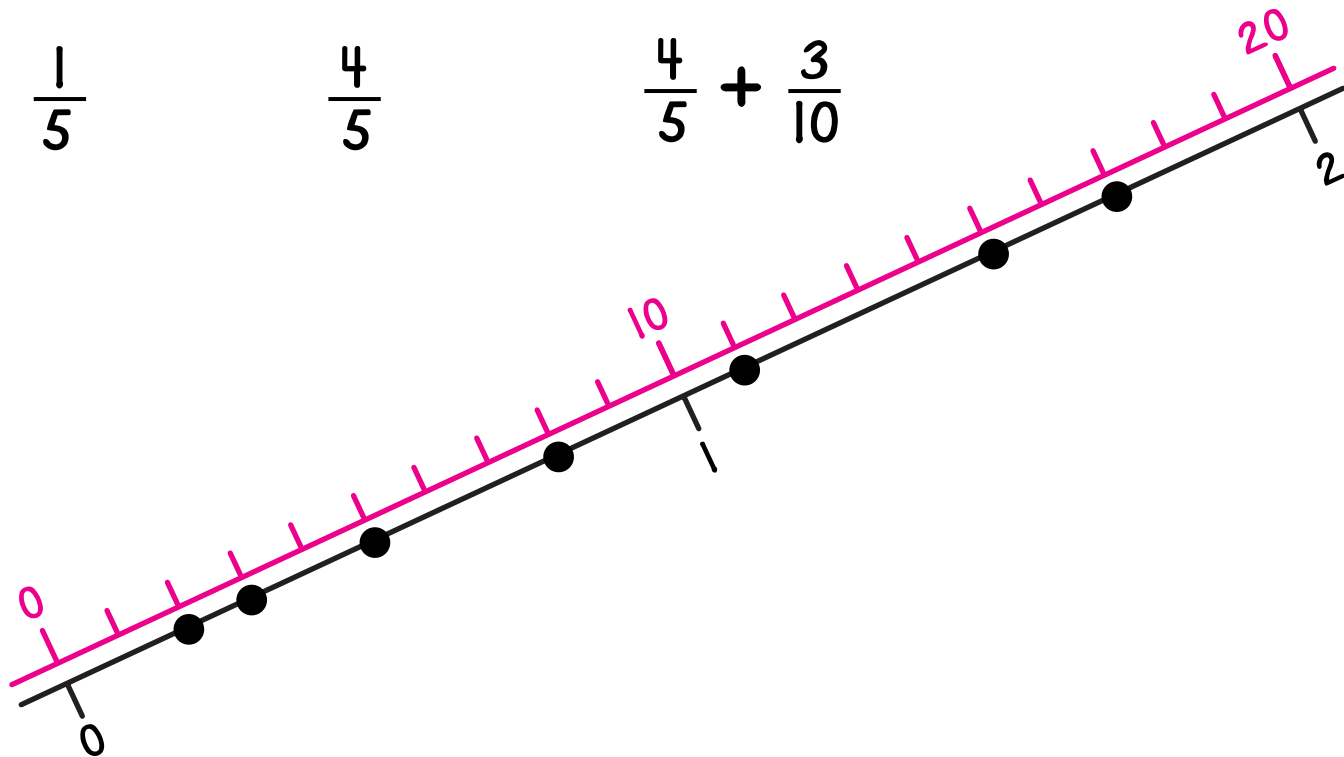
$$\frac{3}{10}$$

$$\frac{17}{10}$$

$$\frac{1}{5}$$

$$\frac{4}{5}$$

$$\frac{4}{5} + \frac{3}{10}$$



Draw all of the possible red arrows between these dots.

$$\frac{4}{5} \bullet$$

$$\bullet \frac{1}{5}$$

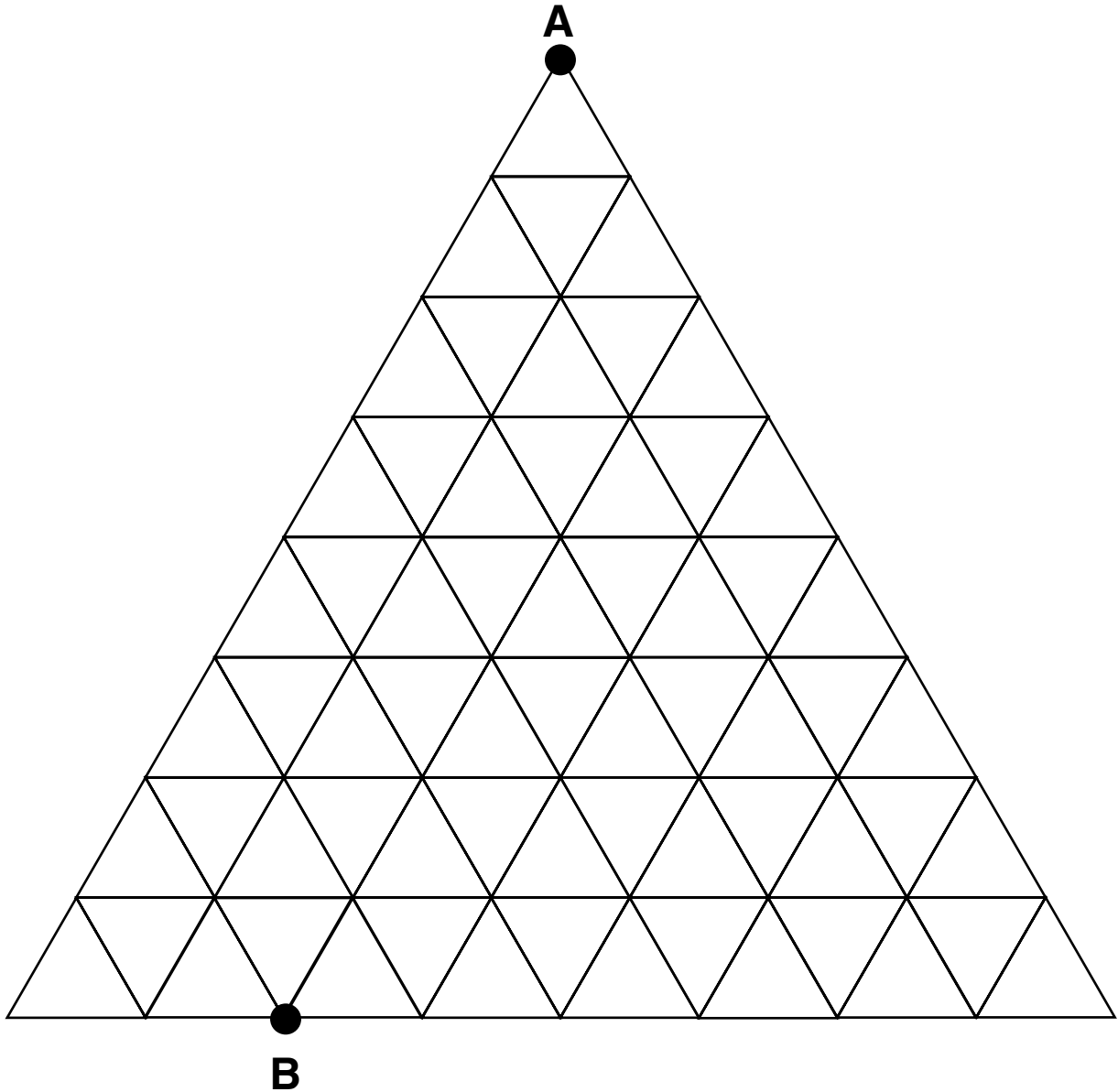
is less than



$$\frac{3}{10} \bullet$$

$$\bullet \frac{1}{2}$$

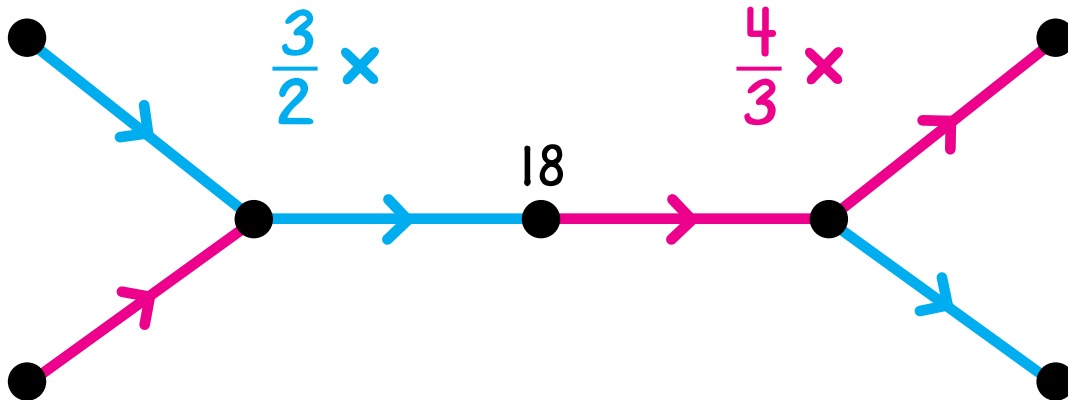
The streets of a town built on a hill are as shown below.
How many shortest routes are there from point A to
point B? _____



Zib is a secret number.

Clue 1

Zib is in this arrow picture.



Clue 2

$$\text{Zib} \square 40 = 4$$

Zib could be _____ or _____.

Clue 3

$$20 \uparrow \text{Zib} = \text{Zib}$$

Who is Zib? _____



1 cm on the map above represents 230 kilometers.
Find the actual distance in kilometers from:

London to Rome _____

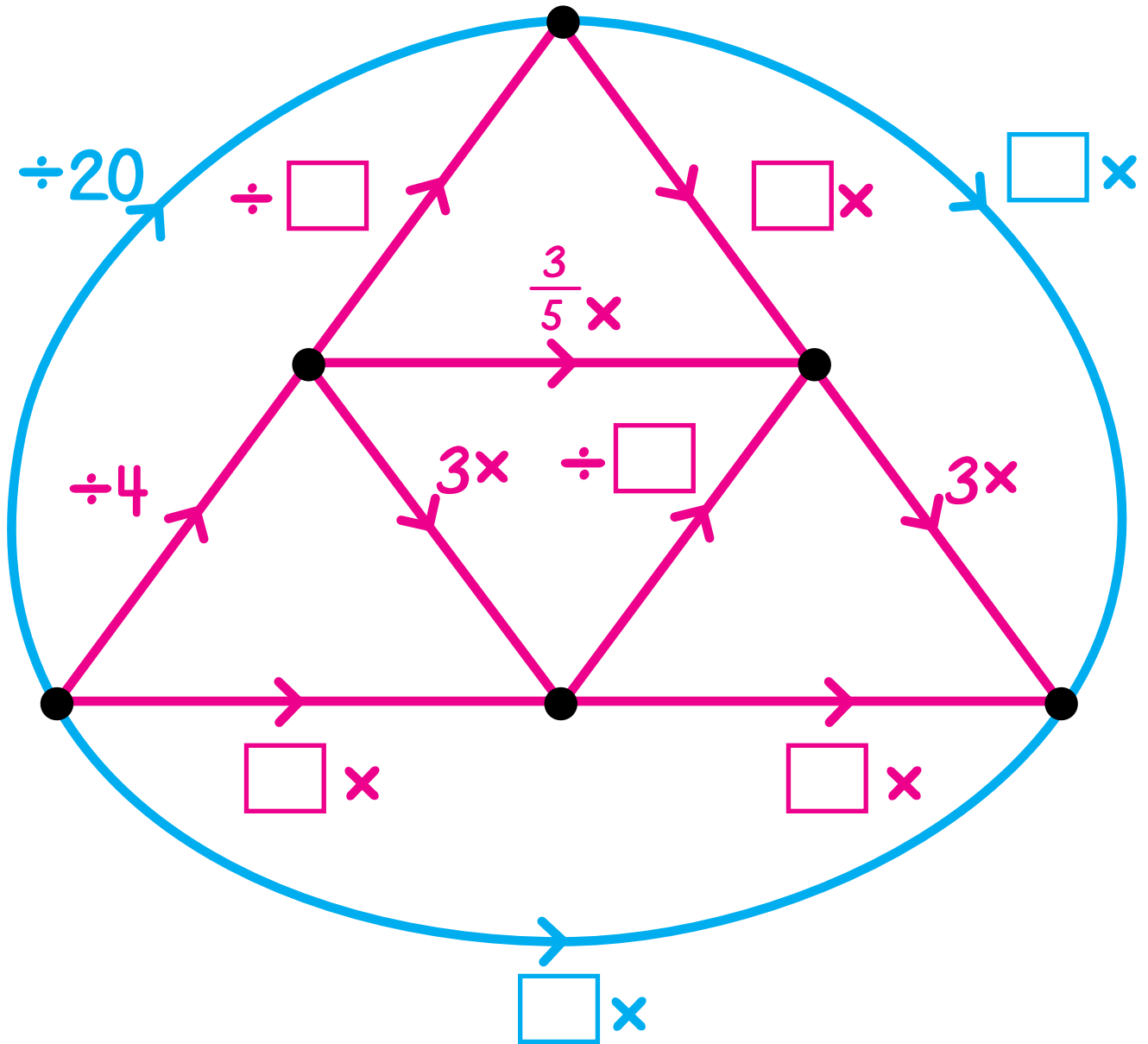
Madrid to Paris _____

Warsaw to Bonn _____

Paris to Bonn _____

A train averages 150 km per hour. When will it arrive in Warsaw if it leaves Madrid at 7:00 a.m. and travels through Paris and Bonn? _____

Fill in the boxes for the arrows.



Mali is a secret number.

Clue 1

Mali is divisible by 4.

Mali = 201 620 3□6

Mali's name can be completed by putting a one-digit number in the box.

Which digits could go in the box? _____, _____, _____, _____,
or _____.

Clue 2

Mali is divisible by 8.

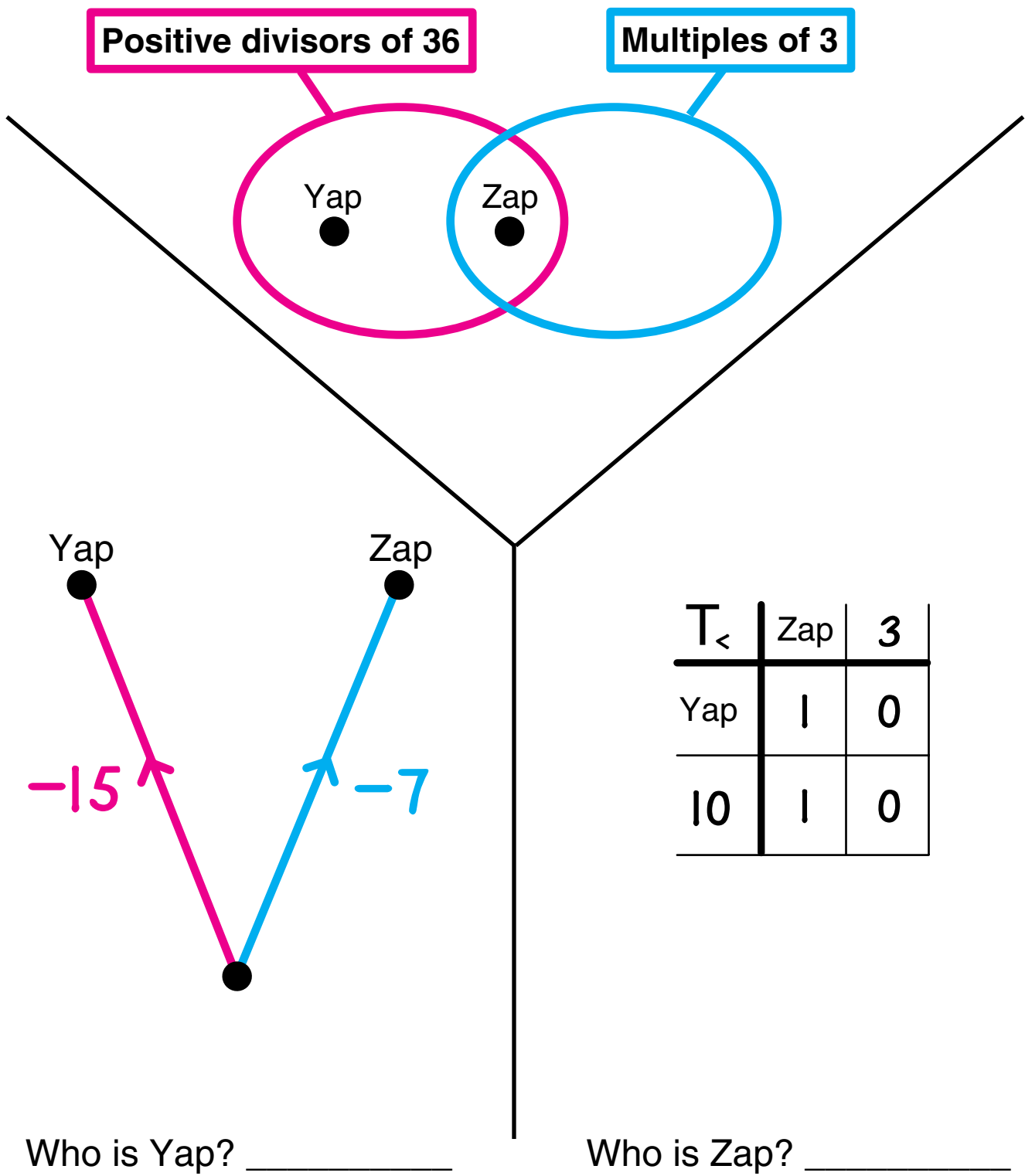
Mali could be _____ or _____.

Clue 3

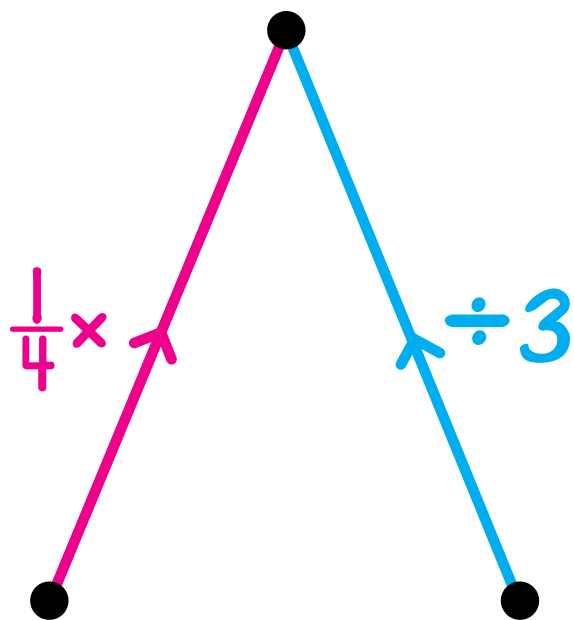
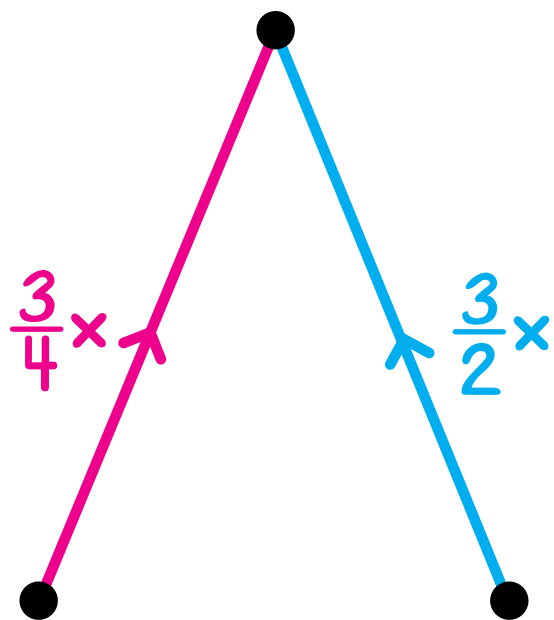
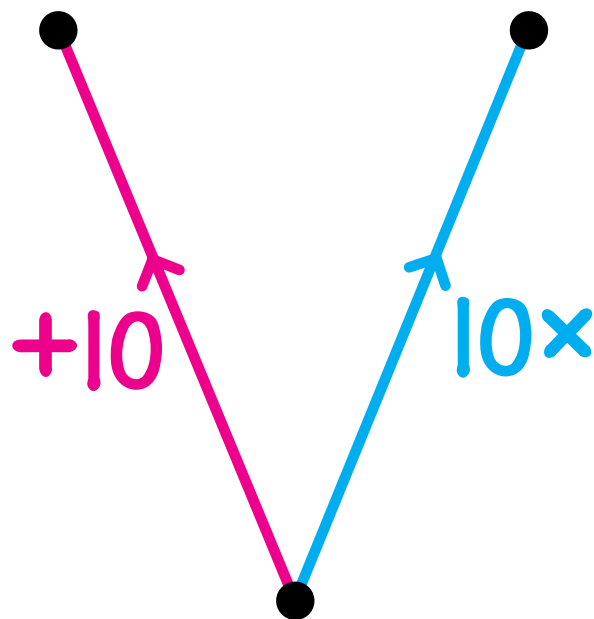
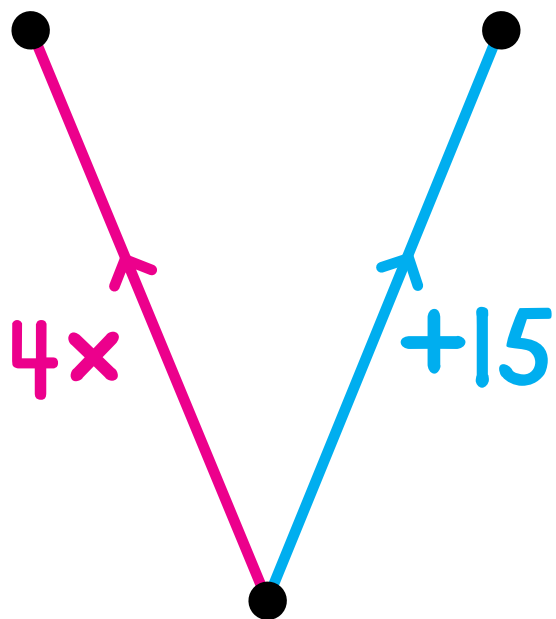
Mali is not divisible by 9.

Who is Mali? _____

Yap and Zap are secret numbers.



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



Mip is a secret whole number.

Clue 1

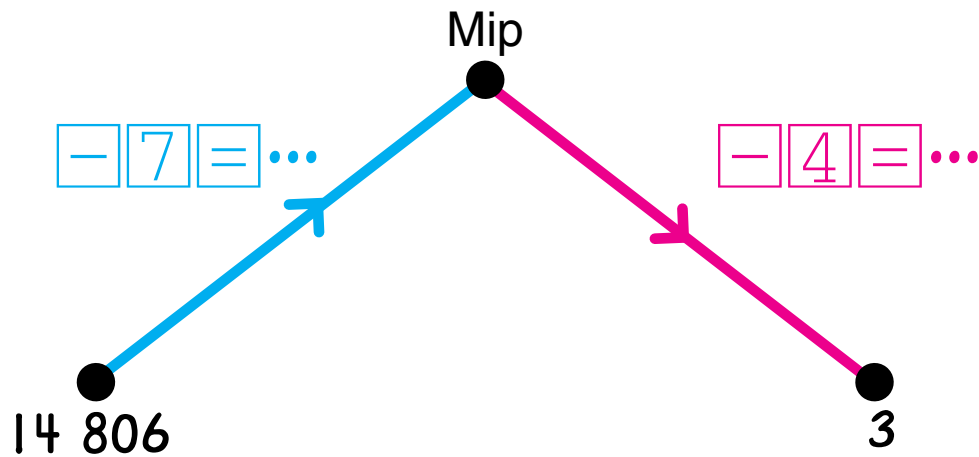
Mip is less than 60.

Clue 2

$$\text{Mip} \square \square 18 = 3$$

Mip could be _____, _____, _____, _____, _____, or _____.

Clue 3



Who is Mip? _____

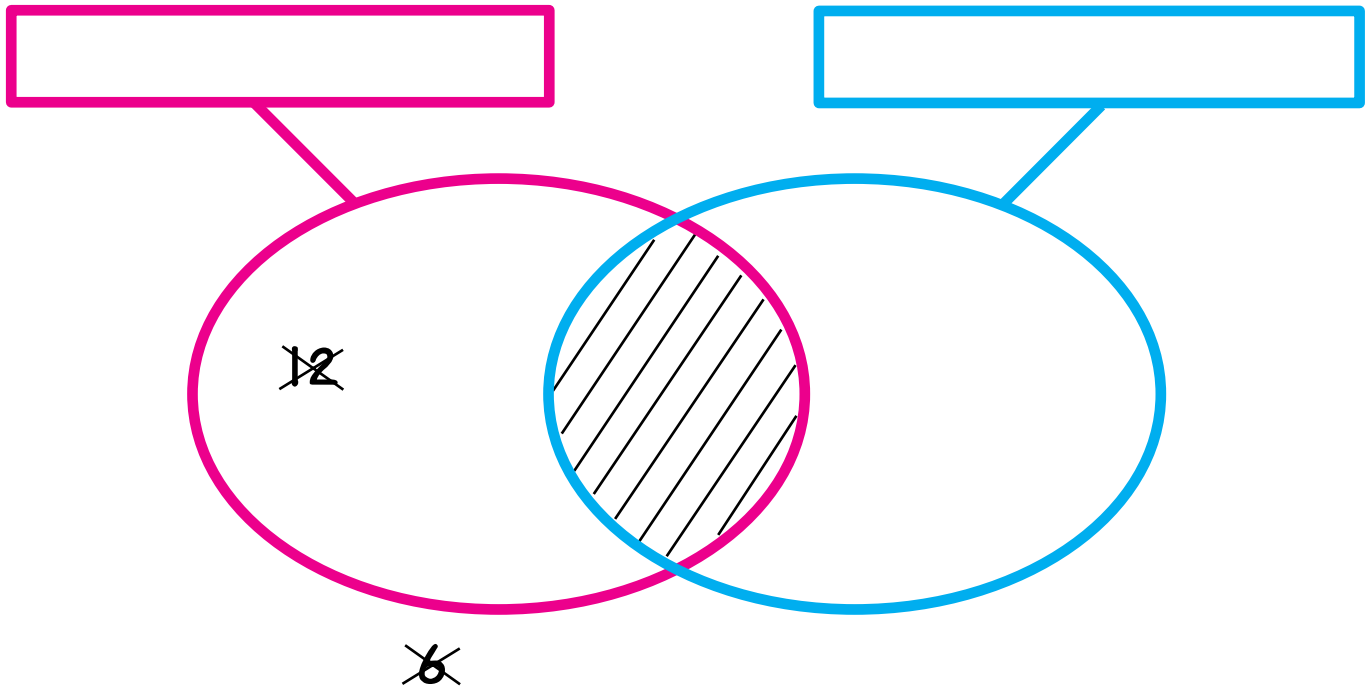
The red label is one of these:

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.




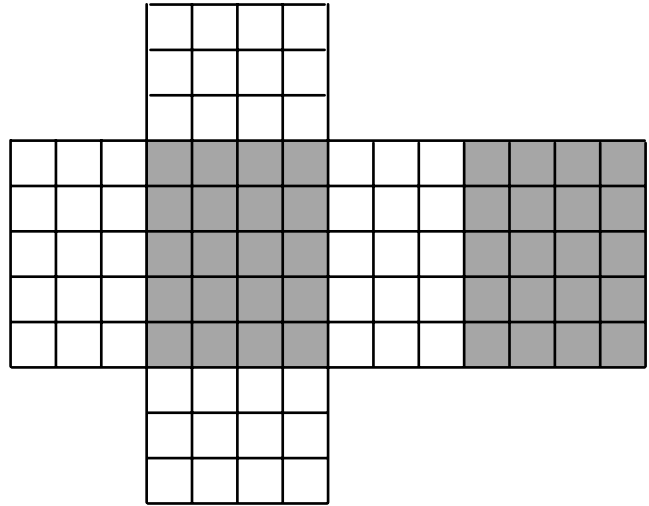
This is a map of a box. The top and bottom faces of the box are shaded.

What is the volume of this box? _____


Use  as a unit of volume.

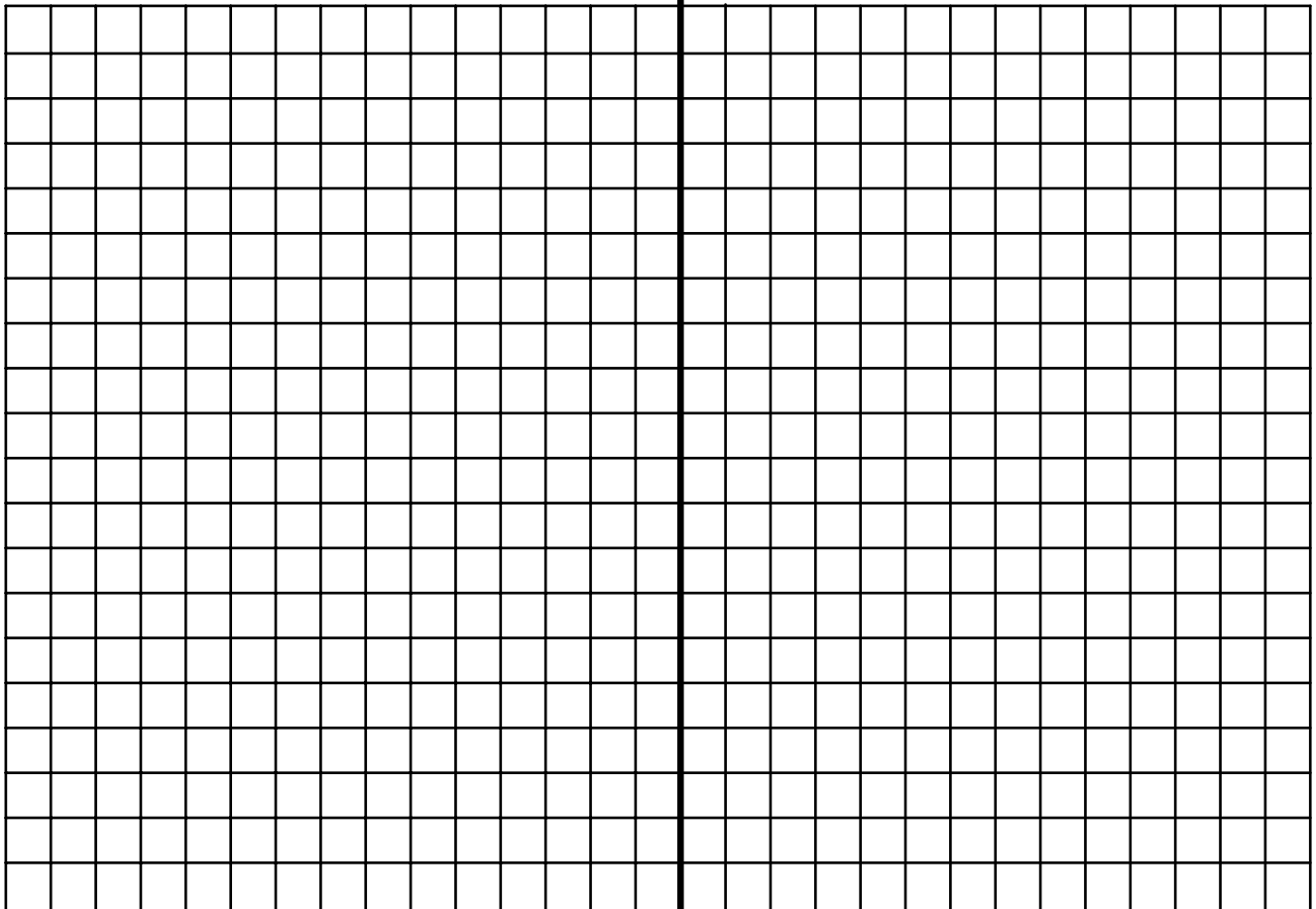
What is the surface area of this box? _____

Use  as a unit of area.



Draw a map of a different box with the same volume as the one above. What is the surface area of your box?

Draw a map of a different box with surface area close to (within 5 ) the one above. What is the volume of your box?



Tip and Top are secret whole numbers.

Clue 1

$$\text{Tip} \square \text{Top} = 10$$

$$\text{Tip} \sqcup \text{Top} = 100$$

(Tip, Top) could be (____, ____), (____, ____), (____, ____),
or (____, ____).

Clue 2

↑	Tip	15
Top	Tip	Top
80	80	80

Who is Tip? _____

Who is Top? _____

Big sale at DALE'S Discount Toy Store

**Buy 3 toys — pay for only one
(pay highest price)**

Buy 1 toy — $\frac{1}{2}$ off

Triana found six toys she would like to buy.

The original prices of these six toys are:

\$2.30 \$7.50 \$5.80 \$4.50 \$1.80 \$6.20

How should Triana arrange to purchase all six toys to get the lowest total sale price? Explain your solution below.

What is the lowest sale price? _____

Note: Triana can ask the clerk to group the toys as she thinks best, or she can go through the check-out line many times.