Name _____

Collage of Problems #6

Match each blue tag with a red tag.

$\frac{15}{5}$	2
$\frac{7}{3}$	1.5
$\frac{12}{6}$	$1\frac{3}{5}$
$\frac{8}{5}$	3
$\frac{9}{4}$	2.25
$\frac{3}{2}$	$2\frac{1}{3}$

Complete the calculations. Show your work.

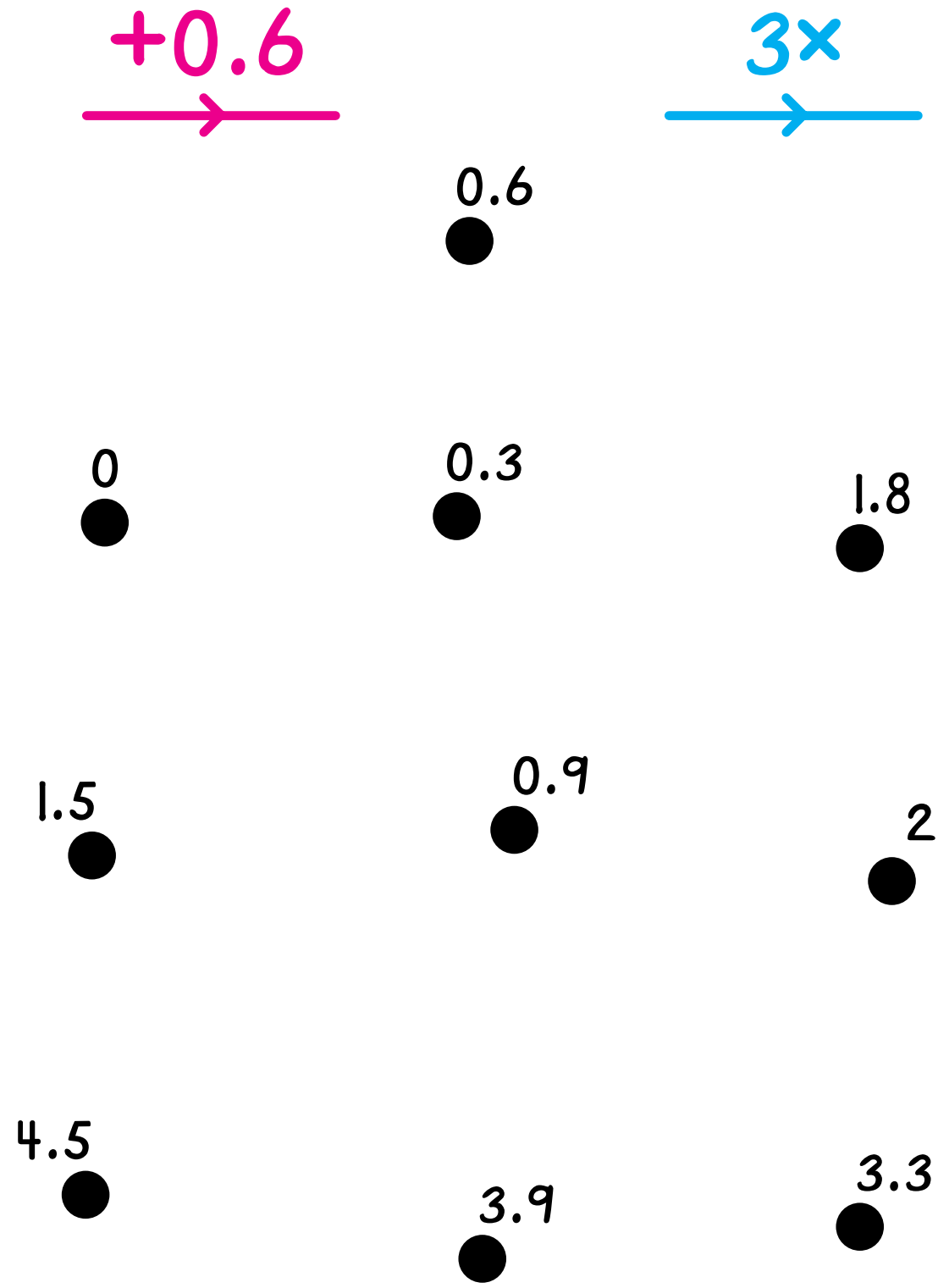
$$\begin{array}{r} 3.68 \\ 70.83 \\ +\,23.849 \\ \hline \end{array}$$

$6.28 + 183 + 9.764$

$$\begin{array}{r} 41.733 \\ -\ 4.68 \\ \hline \end{array}$$

$328 - 63.2$

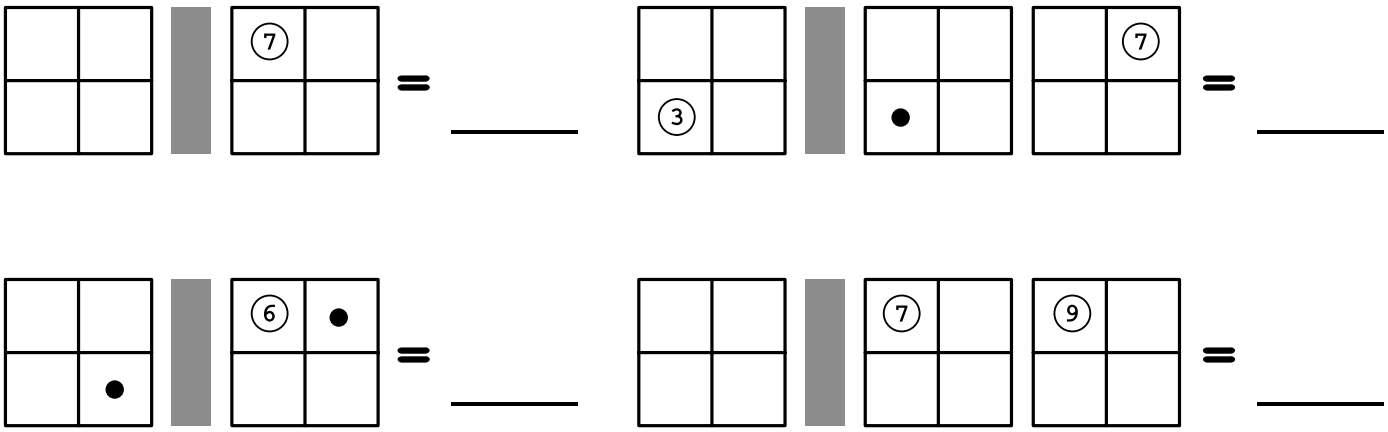
Draw all of the possible red arrows and blue arrows in this picture.



Vim is a secret number.

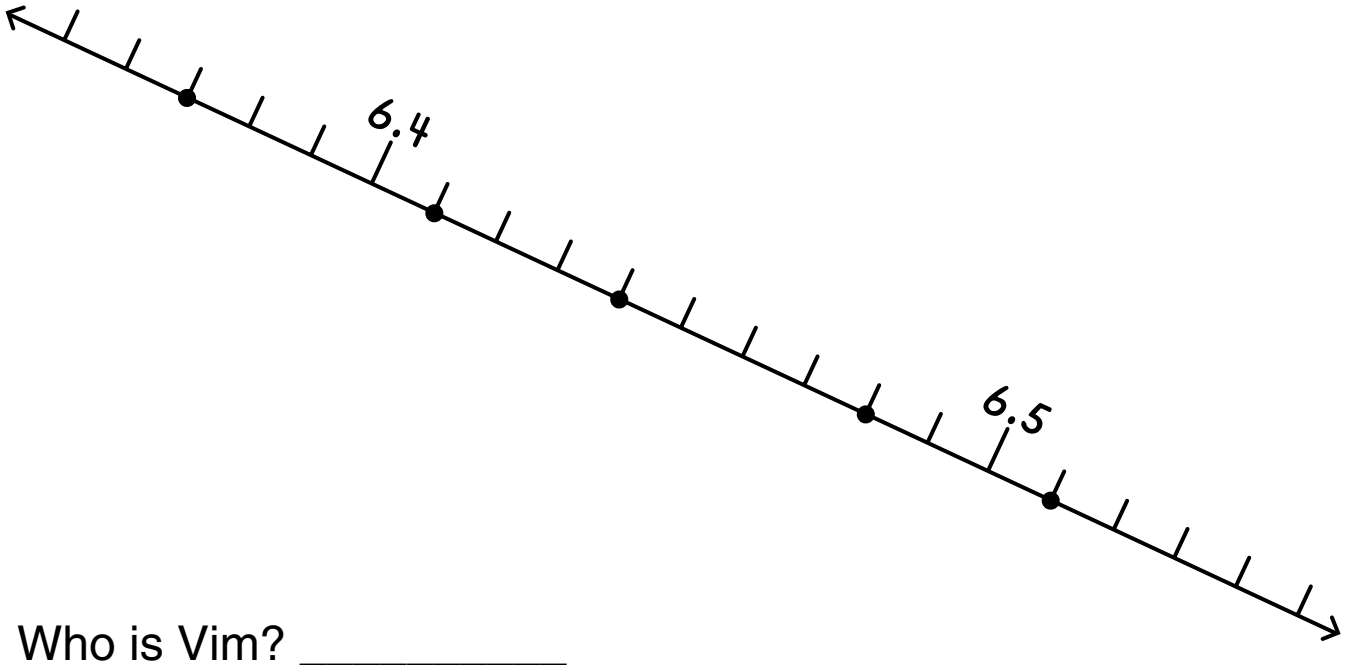
Clue 1

Vim is one of these numbers.



Clue 2

Vim is one of the dots on this number line. Label the dots.



Who is Vim? _____

Mathemagic

(The Great Mathematician knows all…)

1. Write a three-digit number whose first and last digits differ by more than 1. _____

2. Write this number with the digits reversed. _____

3. Find the difference between your numbers in steps 1 and 2. (Subtract the smaller number from the larger number.)_____

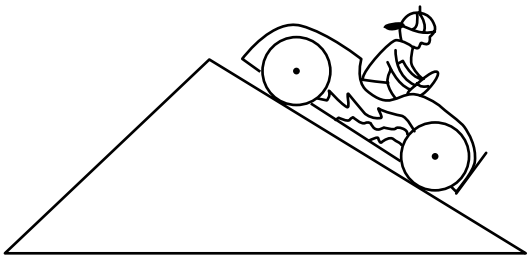
4. Write the number in step 3 with the digits reversed. _____

5. Add the numbers from steps 3 and 4. _____

The Great Mathematician has written your number in step 5 on page 30.

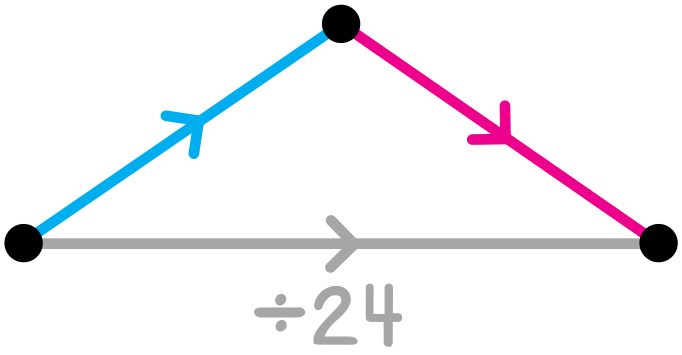
Match each blue tag with a red tag.

$\frac{9}{10} + \frac{3}{10}$	0.6
$\frac{9}{10} - \frac{3}{10}$	$\frac{1}{6}$
$\frac{2}{3} + \frac{1}{2}$	$\frac{9}{8}$
$\frac{2}{3} - \frac{1}{2}$	$1\frac{2}{10}$
$\frac{3}{4} \div \frac{2}{3}$	$\frac{1}{2}$
$\frac{3}{4} \times \frac{2}{3}$	$1\frac{1}{6}$



Alfonso wants to make a ramp (like the one pictured above) for his go-cart. He has five pieces of wood of lengths 2, 3, 4, 5, and 7 meters. What combinations of the three pieces of wood could he use to build the ramp?

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



Complete the chart.

→	→
÷6	
	÷2
÷8	
	÷48

Use the given information to help solve these problems.

20% of $350 = $70
6% of $350 = $21

26% of $350 = ☐

14% of $350 = ☐

60% of $350 = ☐

18% of $350 = ☐

100% of $350 = ☐

106% of $350 = ☐

☐ % of $350 = $140

☐ % of $350 = $35

☐ % of $350 = $420

☐ % of $350 = $700

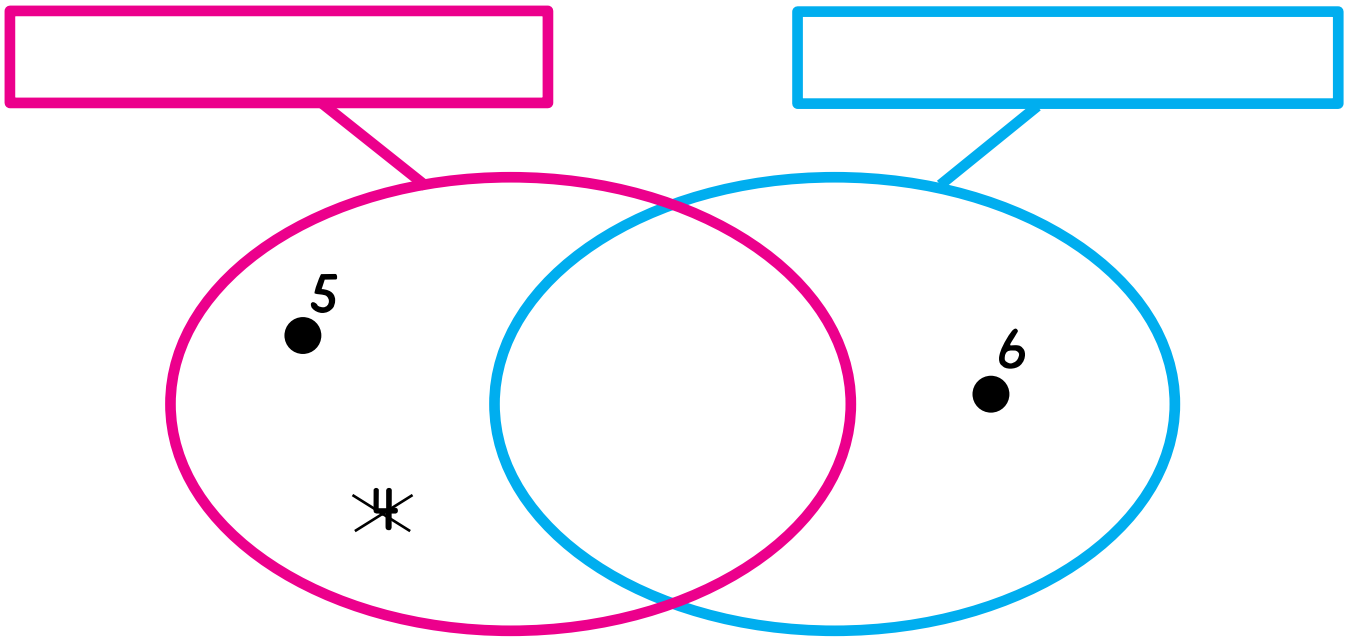
The red label is one of these:

Multiples of 2
Multiples of 3
Greater than 10
Less than 10
Positive divisors of 18
Positive divisors of 20

The blue label is one of these:

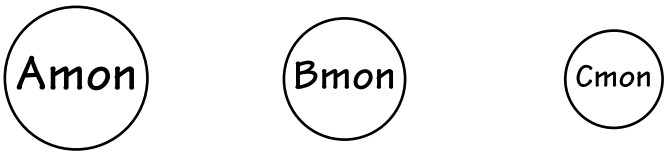
Multiples of 2
Multiples of 3
Greater than 10
Less than 10
Positive divisors of 18
Positive divisors of 20

Label the strings.

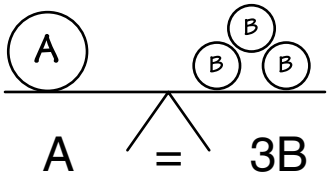


Leah is trying to figure out the money in Sikinia. This is what she knows so far.

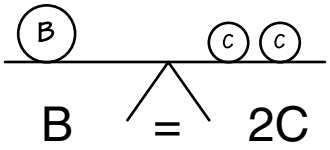
- There are three kinds of coins



- One Amon trades for three Bmons



- One Bmon trades for two Cmons



Complete this information for Leah.

A = _____C

3A = _____B

12B = _____A

4C = _____B

12B = _____C

A + B = _____C

3B + A = _____C

2B + 2C = _____A

Leah has three Amons. Give several trades she could make for Bmons and Cmons.

3A= _____ 3A= _____ 3A= _____

Complete the calculations. Show your work.

4.79×0.603

$377.4 \div 1.2$

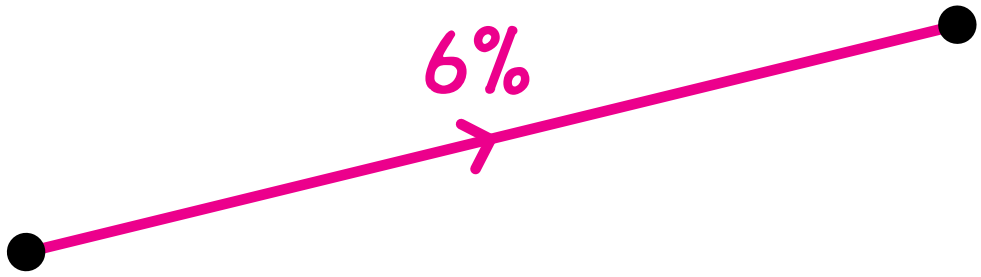
Answer: ☐☐☐.☐

$204.36 \div 1.5$

Answer: ☐☐☐.☐☐

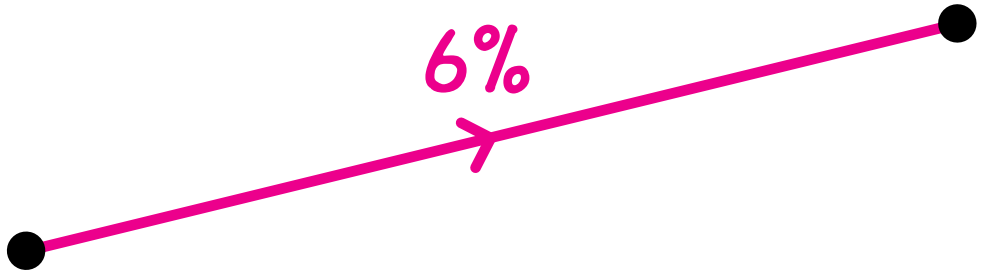
Use the arrow picture to help solve each problem. Label the dots and then solve the problem.

1. Josephine places $65 in a savings account at a bank which gives 6% annual interest.



How much interest does Josephine earn at the end of one year? _____

2. Lester places his money in a savings account at the same bank. At the end of one year, he collects $2.64 interest.

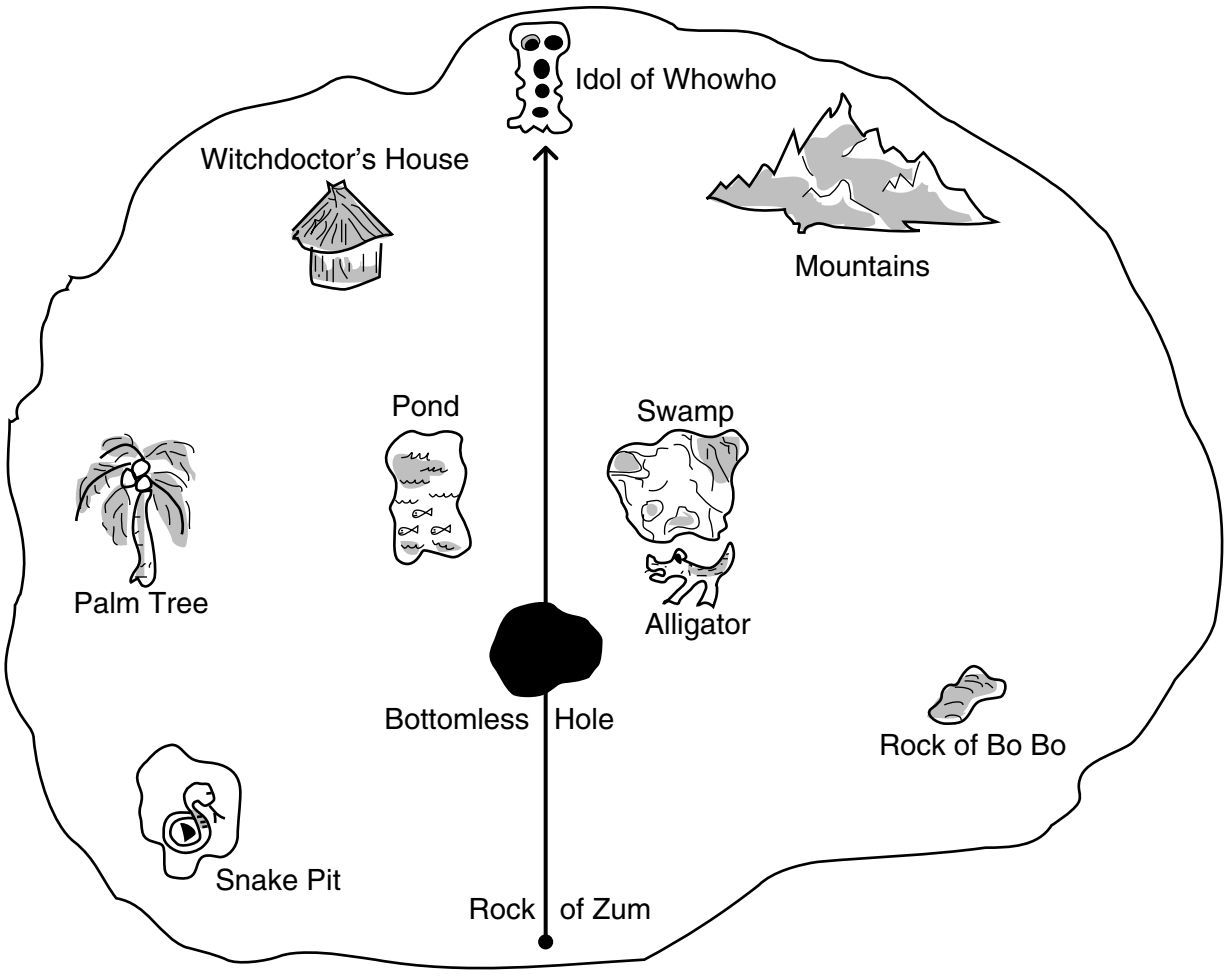


How much money does Lester put in his savings account at the start? _____

Treasure Map

Start at the magical Rock of Zum and face the Idol of Whowho.
Turn 50° to your right (draw a ray to show where you are facing).
Walk 16 kilometers straight ahead and mark your location with a dot. Turn 105° to your left and walk 16 kilometers straight ahead.
Draw a ray and then a dot to mark your new location.
Turn 83° to your left. You are now facing the location of a hidden treasure. It is 13 kilometers straight ahead. Draw an X to mark the spot.

SCALE: 1 cm = 2 km



Tug-of-War

Barb, Alice, Jerry, and Ted enjoy playing tug-of-war. Alice by herself can beat Barb and Jerry together. Alice and Barb together are exactly as strong as Jerry and Ted; neither team can win. But Ted and Barb together easily beat Alice and Jerry.

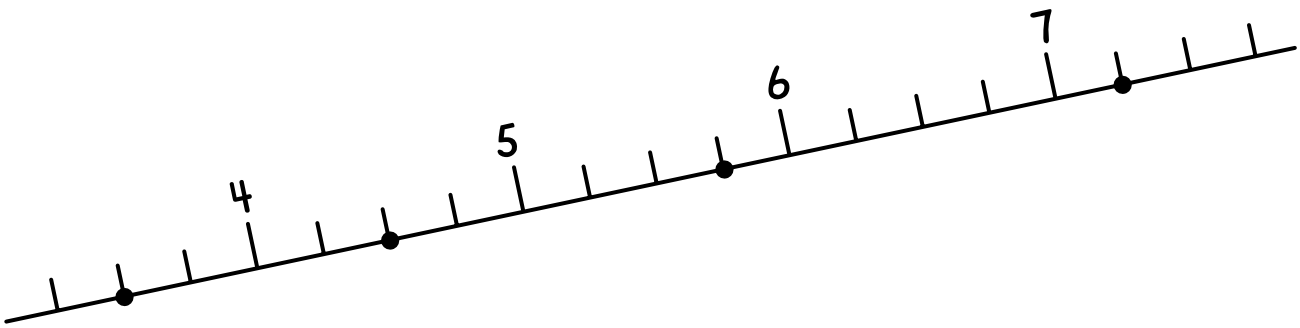
List the children in order of strength.

_____, _____, _____, _____
(strongest) (weakest)

Tina is a secret number.

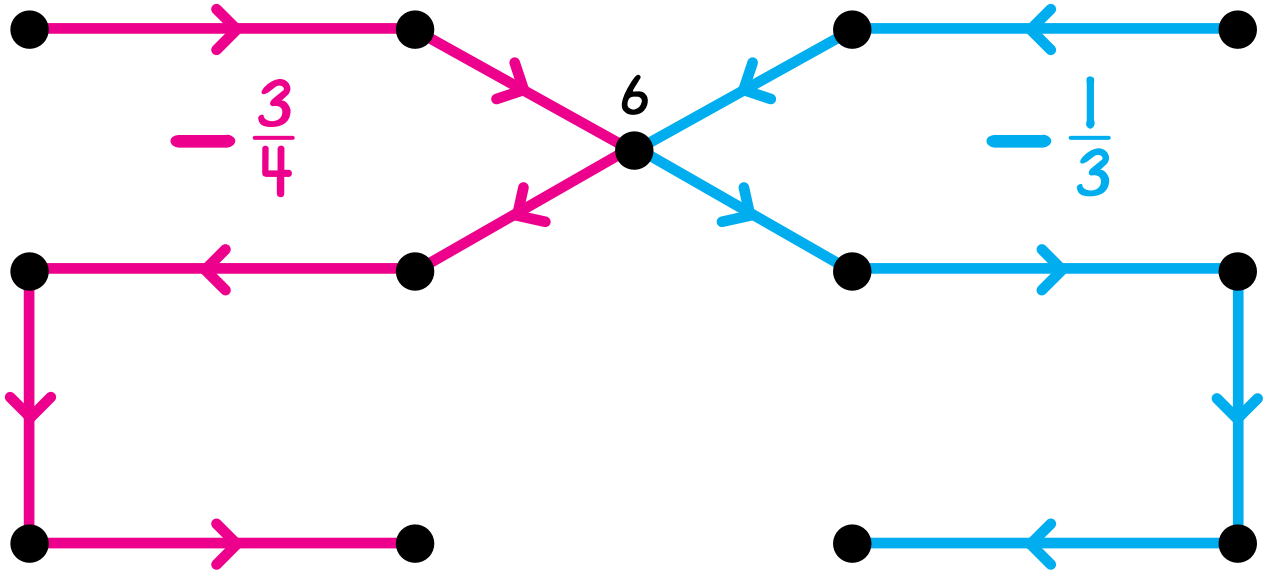
Clue 1

One of these dots is for Tina. Label the dots.

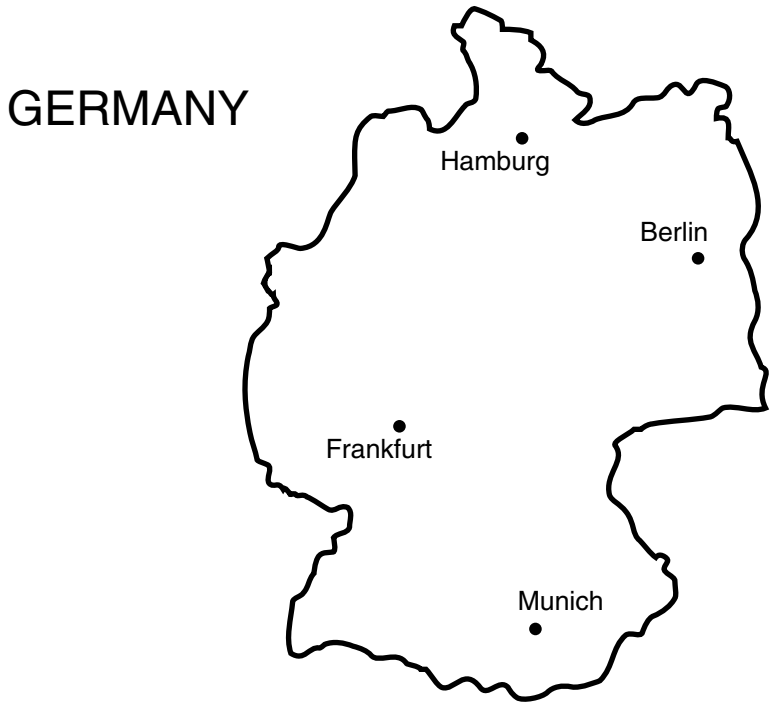


Clue 2

Tina is in this arrow picture.



Who is Tina? _____



SCALE: 1 cm on the map = 100 km

On the map, what is the length of a line segment between Munich and Hamburg? _____ What is the actual distance between Munich and Hamburg? _____

If an airplane that flies 400 kilometers in 1 hour leaves Munich at 9:30 AM, what time will it arrive in Hamburg? (Circle the closest answer.)

10:40 AM 11:10 AM 11:50 PM 1:20 PM

What is the distance between Germany's northernmost point and Germany's southernmost point? _____

Dresden is 350 km from Munich and 330 km from Frankfurt. Draw and label a dot for Dresden on the map.

Hanover is 240 km from Berlin. Indicate in red places where Hanover could be.

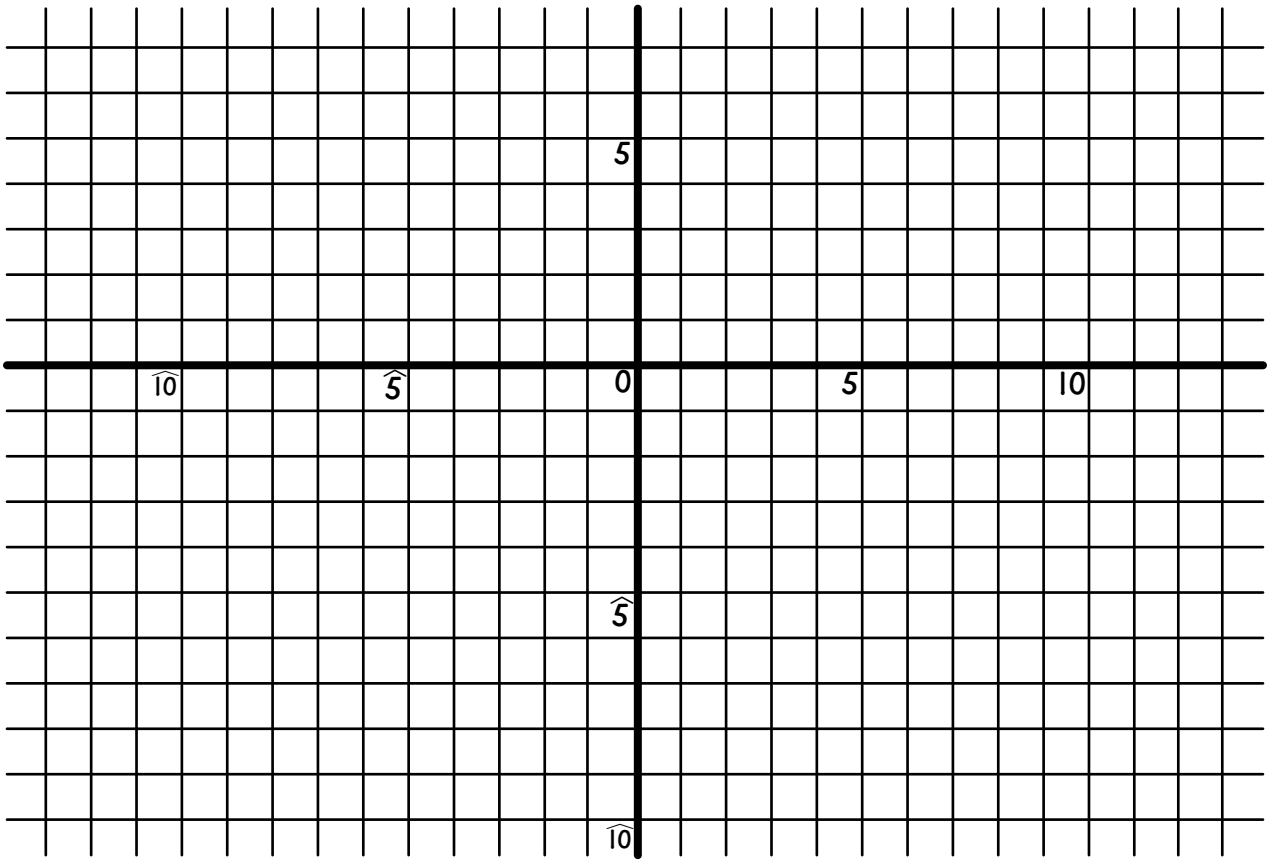
$$a \rightarrow \left(\frac{1}{2} \times a\right) - 2$$

Fill in the blanks. Each ordered pair belongs to the red relation. One is done for you.

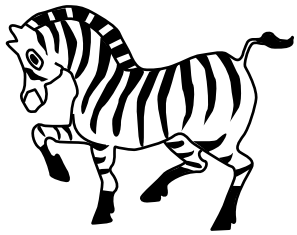
(8, 2) (12, ___) (6, ___)

(−8, ___) (−4, ___) (9, ___)

For each ordered pair, draw a dot on the grid. Sketch the Cartesian graph of this relation.







Young Wilbur visited the zoo one day and later told his sister, Julia, about one area where he saw both ostriches and zebras. Julia asked, “How many ostriches and zebras did you see?” Wilbur answered, “I won’t tell you that, but there were 24 eyes and 30 feet.”

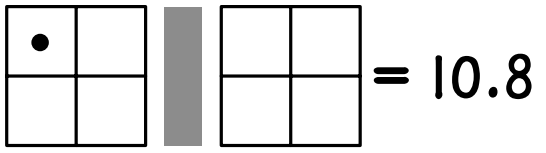
Julia quickly calculated the number of ostriches and zebras. Can you?

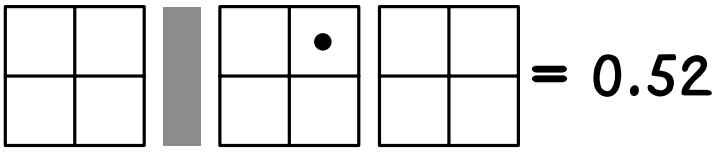
There were _____ ostriches and _____ zebras.

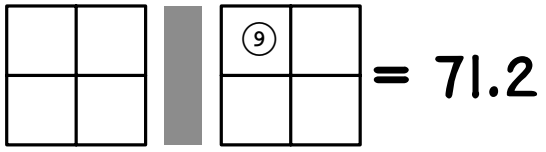
Extra problem: Wilbur saw some other common jungle animals in another part of the zoo. Altogether, these animals had 5 heads and 8 feet. Which animals and how many of each kind could Wilbur have seen? (Hint: The answer is a little tricky.)

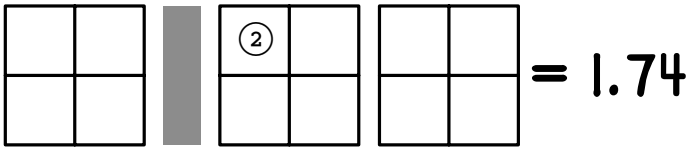
Put each number on the Minicomputer by adding exactly one of these checkers:

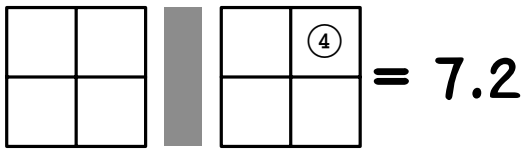
⑥ ⑦ ⑧

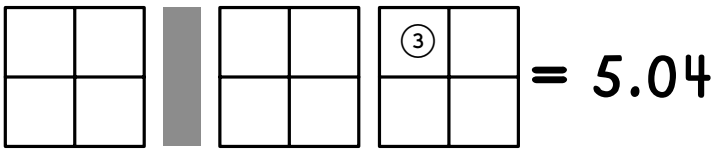




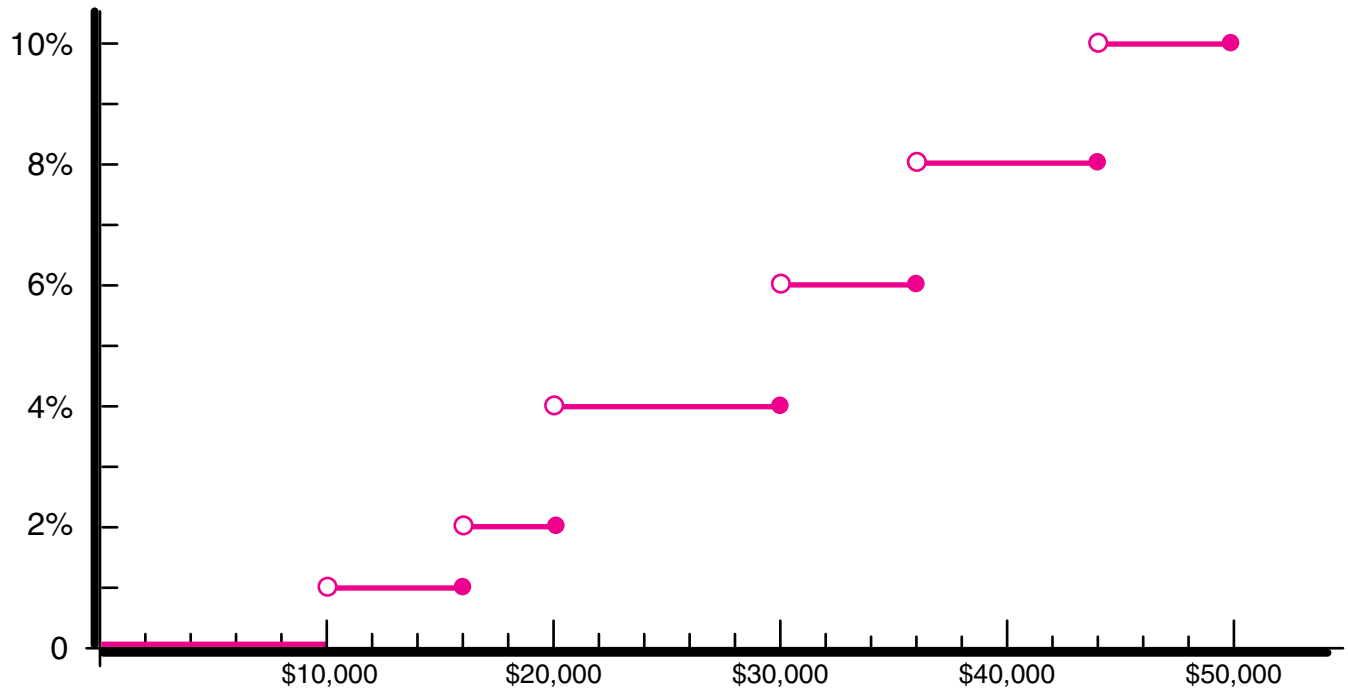








State Income Tax Rate



Annual Income

1. What is the percent state income tax rate for a person who earns $23,500 in one year? _____ $17,300? _____

2. Ms. Stein's state income tax rate is 6%. What is the largest her annual income could be? _____ Smallest? _____

3. Mr. Dowler earns $42,000 per year. How much state income tax does he pay? _____ After paying his state income tax, Mr. Dowler puts 5% of his earnings into a savings account this year. How much does he put in the account? _____

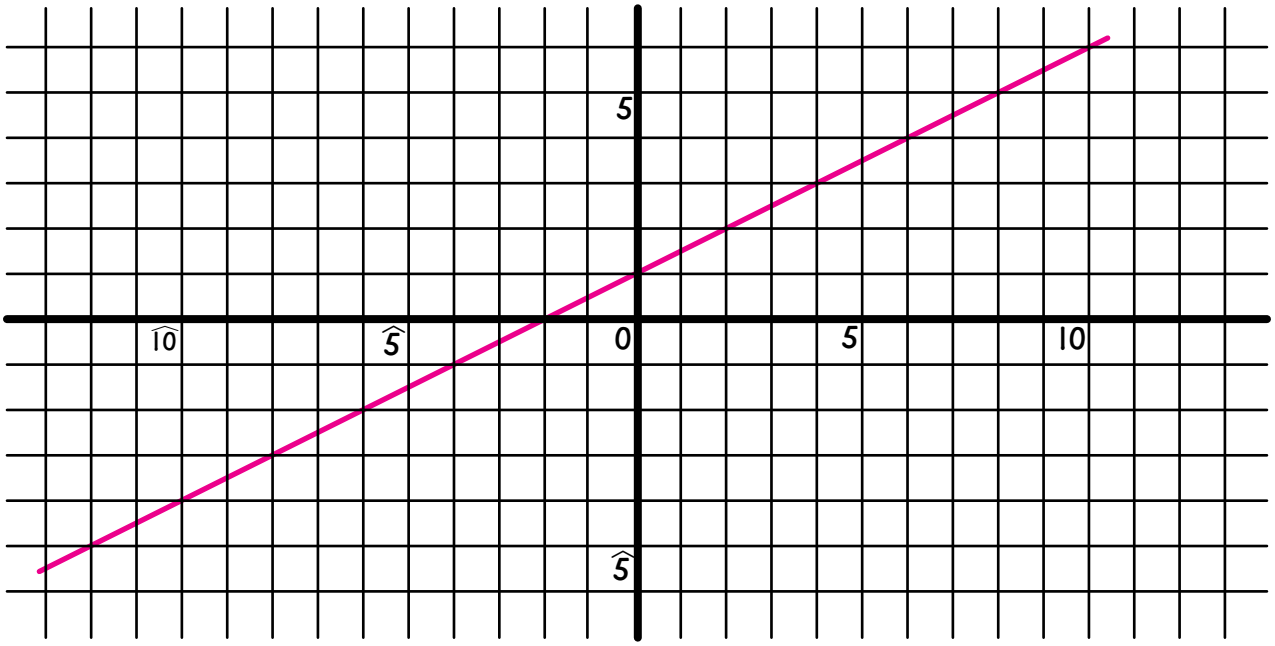
4. Ms. Lapin's state income tax rate is 10%. This year she paid $4,570 in state income tax. What is her annual income?

_____

(Kim, Tim) is a secret ordered pair of numbers.

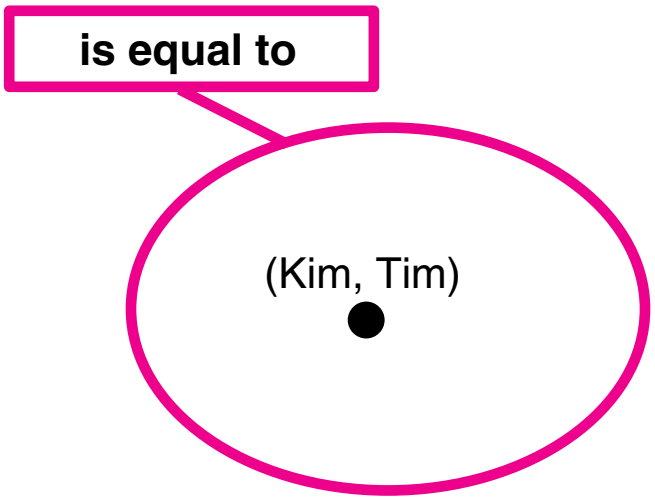
Clue 1

(Kim, Tim) is a dot on the red line.



(Kim, Tim) could be (6, _____), ($\widehat{6}$, _____), (_____, 5), (_____, $\widehat{4}$), (9, _____), ($\widehat{9}$, _____), and so on.

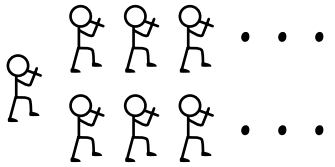
Clue 2



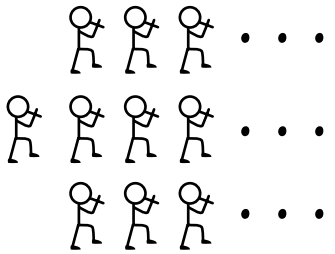
(Kim, Tim) is (_____, _____).

Paton High School's marching band is preparing to march in a city parade. Their director is trying to find which formation they should use.

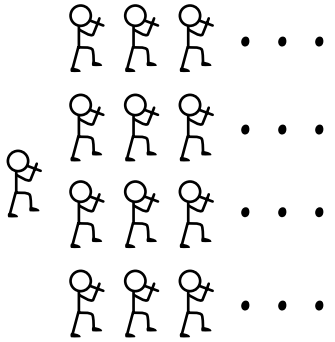
When the band marches in rows of two, poor Waldo is alone in the last row.



When the band marches in rows of three, again poor Waldo is alone in the last row.



When the band marches in rows of four, alas, poor Waldo is alone in the last row.

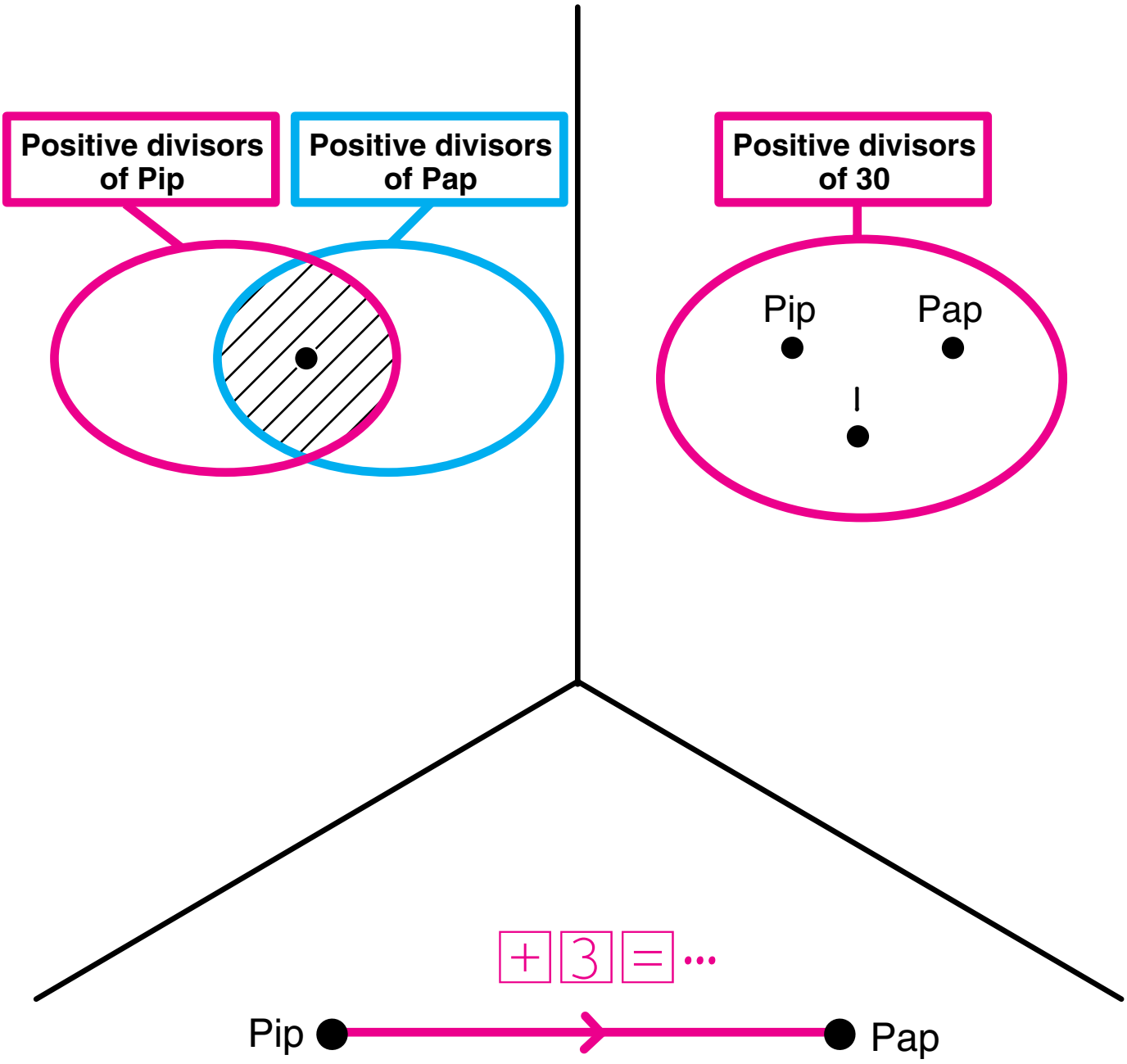


But when the band marches in rows of five, every row has exactly five people.

What is the least number of members the band could have? _____

If the band has between 50 and 140 members, how many students are in the band? _____

Pip and Pap are secret numbers.



Who is Pip? _____ Who is Pap? _____

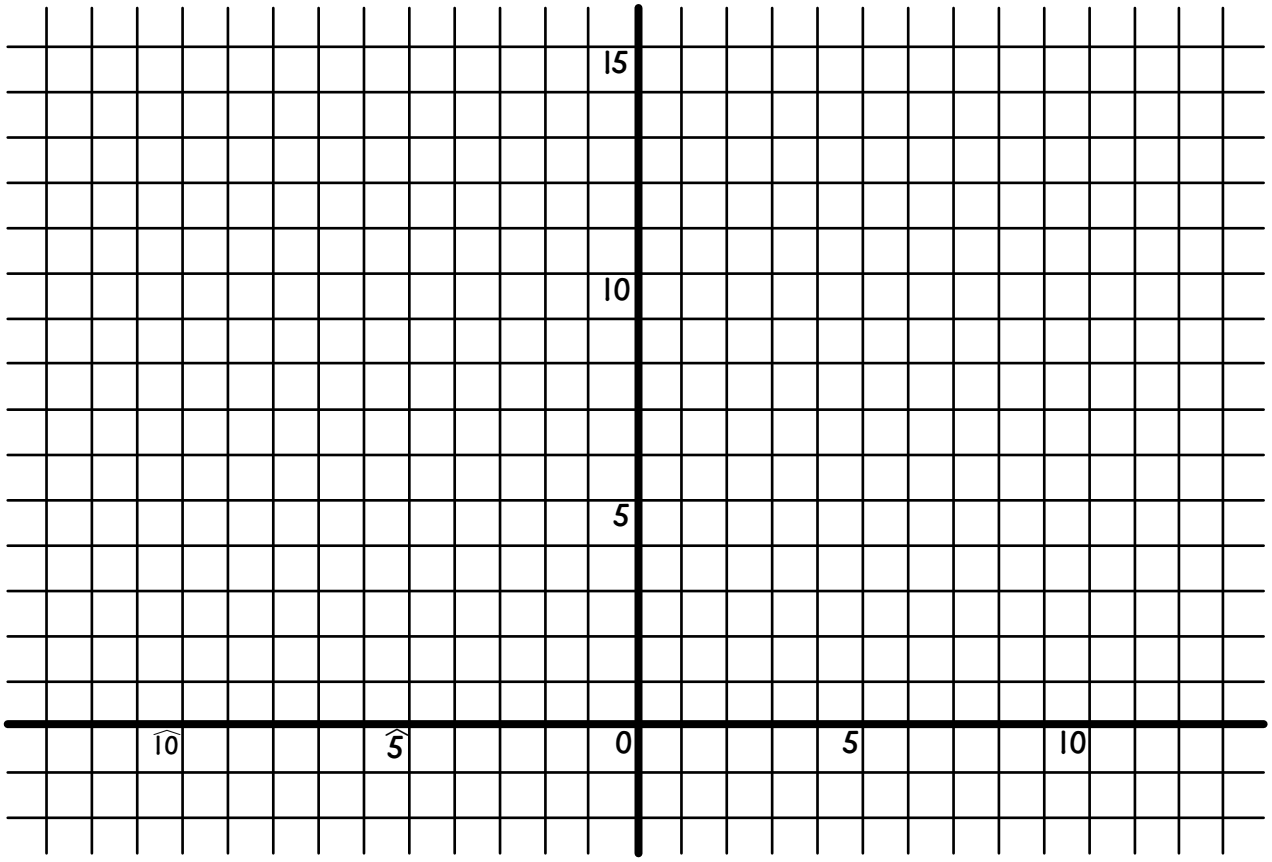
$$a \rightarrow \frac{1}{2} \times (a+2)^2$$

Fill in the blanks. Each ordered pair belongs to the blue relation. One is done for you.

(2, 8) (0, ___) (3, ___)

(−4, ___) (−2, ___) (−7, ___)

For each ordered pair, draw a dot on the grid. Sketch the Cartesian graph of this relation.

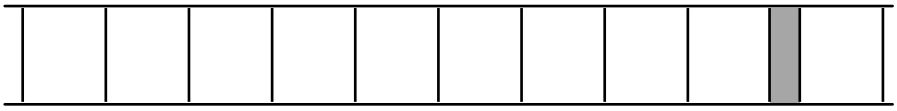


Name two more ordered pairs that belong to the blue relation.

(____, ____) and (____, ____)

Put each number on the abacus and fill in the boxes.

Decimal Writing | Base Two | Base Two Writing

500 =  = ☐

Base Five | Base Five Writing

500 =  = ☐

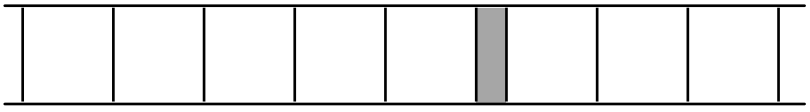
Base Eight | Base Eight Writing

500 =  = ☐

Base Three | Base Three Writing

☐ =  = 202.11

Base Ten | Base Ten Writing

☐ =  = 202.11

Base Thirteen | Base Thirteen Writing

☐ =  = 202.11

$$a * b = \frac{a}{b} + \frac{1}{2}$$

Example: $2 * 3 = \frac{2}{3} + \frac{1}{2} = \frac{4}{6} + \frac{3}{6} = \frac{7}{6}$

Complete.

$3 * 4 =$ ☐ $\quad 1 * 10 =$ ☐

$10 * 7 =$ ☐ $\quad 2 * 5 =$ ☐

$4 * 3 =$ ☐ $\quad$ ☐ $* 8 = 1\frac{1}{4}$

☐ $* 10 = 2$ $\quad$ ☐ $* 5 = 3.3$

$6 *$ ☐ $= \frac{5}{2}$ $\quad 1 *$ ☐ $= \frac{2}{3}$

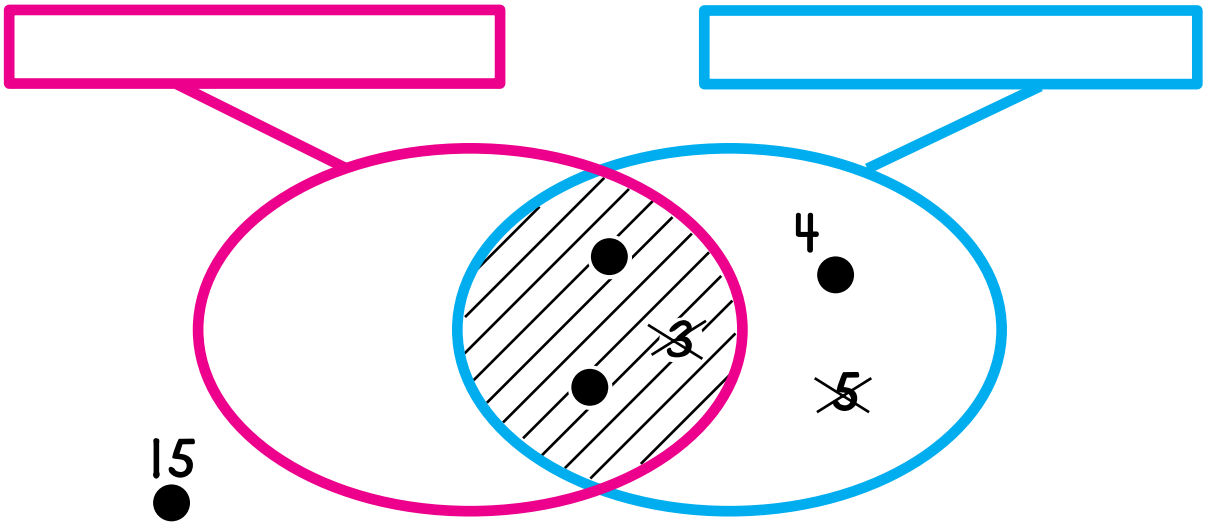
The red label is one of these:

Multiples of 2
Multiples of 3
Multiples of 10
Odd numbers
Positive prime numbers
Positive divisors of 12
Positive divisors of 18
Positive divisors of 20
Positive divisors of 24
Positive divisors of 27

The blue label is one of these:

Multiples of 2
Multiples of 3
Multiples of 10
Odd numbers
Positive prime numbers
Positive divisors of 12
Positive divisors of 18
Positive divisors of 20
Positive divisors of 24
Positive divisors of 27

Label the strings.



Use the spaces to briefly explain your answers.

The world population in 1996 is about 5.8 billion. If the present 1.6% yearly rate of net population growth continues, what will be the world's population in 1997? _____ 1998? _____ 2000? _____

In what year will the population reach 6 billion? _____

7 billion? _____

Number in step 5 on page 6:

1089

Alice, Brenda, and Carl are three of Nabu's friends. When Nabu asked who was the oldest, they made the following statements.

Alice: I am younger than Brenda.
Carl is not the oldest.

Brenda: I am the oldest.
Carl is younger than Alice.

Carl: I am older than Brenda.
Alice is the youngest.

To confuse Nabu, each person made one true statement and one false statement. Nabu was still able to determine who was oldest and who was youngest.

Who is oldest, Alice, Brenda, or Carl? _____

Who is youngest? _____

Circle each person's true statement.

Suppose you win one million dollars on your 12th birthday with the following conditions.

1. Each day you must spend exactly enough to average $15 an hour.
   (Use a 24 hour day and the mean average.)
2. At the beginning of each year, 5% interest will be added to the amount you have left.
3. You must spend all the money before your 21st birthday.

How much must you spend each day? _____

each year? _____

Can you spend the money before your 21st birthday? _____
How long will it take to spend all the money?
Explain your answer.