

**CSMP Mathematics  
for the  
Intermediate Grades  
Part VI**

**Worksheets**

# What's In This Book?

This book contains all the worksheets you will need for *CSMP for the Intermediate Grades, Part VI*. Worksheets are labeled with the same letter and number as the lessons with which they are used. In this book, they are in the following order:

## **N** Worksheets

N3	N16	N27
N5	N22	N30
N9	N23	N32
N11	N24	N33
N15	N26	

## **L** Worksheets

L5	L9	L11
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## **G** Worksheets

G1	G10	G14
G3	G11	G15
G6	G13	G16

## **P** Worksheets

P1	P3	P6
P2	P4	P7

Name \_\_\_\_\_

N3 \*

Put each number on the Minicomputer using exactly one of these weighted checkers:

- (2) (3) (4) (5) (6) (7) (8) (9)

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 20$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 32$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 18$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 48$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 100$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 280$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 360$$

$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} \begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array} = 480$$

Name \_\_\_\_\_

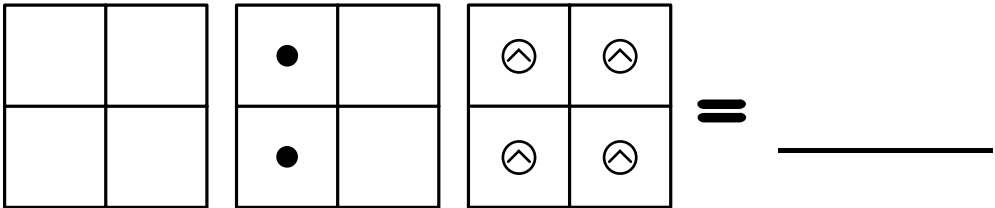
N3      \*\*

Clue 1

Paf is a prime number between 60 and 80.

Paf could be \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

Clue 2

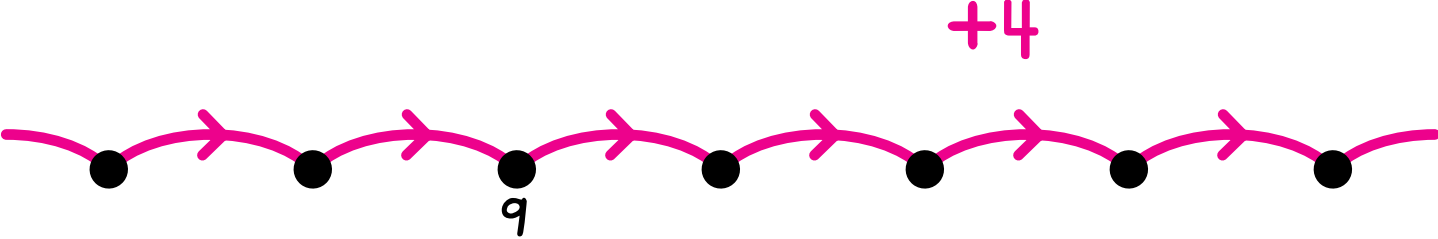


Paf can be shown here on the Minicomputer by moving exactly one checker to another square.

Paf could be \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

Clue 3

Paf is on a +4 arrow road with 9.



Who is Paf? \_\_\_\_\_

Name \_\_\_\_\_

N3      \*\*\*

Rif and Raf are secret whole numbers.

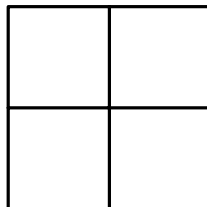
Clue 1

Rif is a prime number between 100 and 120.

Rif could be \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

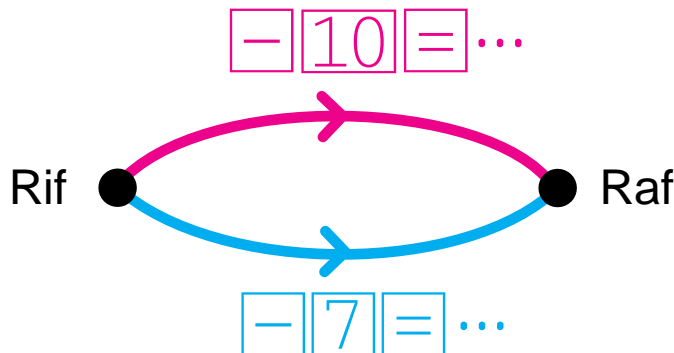
Clue 2

Raf can be put on the ones board of the Minicomputer using just a ③-checker and a ⑦-checker.



Raf could be \_\_\_\_\_  
\_\_\_\_\_

Clue 3



Who is Rif? \_\_\_\_\_

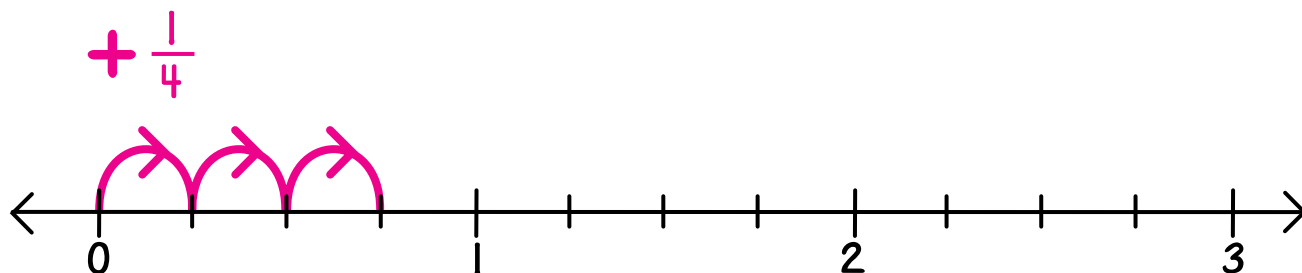
Who is Raf? \_\_\_\_\_

Name \_\_\_\_\_

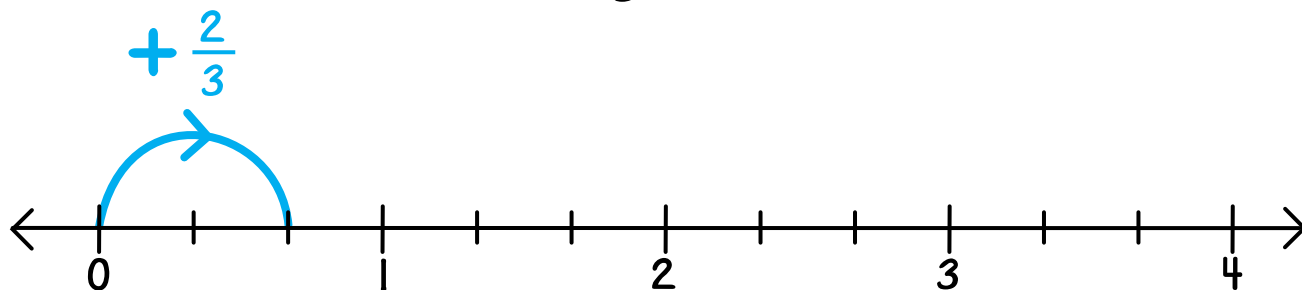
N5 \*

Draw arrows on each number line to help do the calculation.

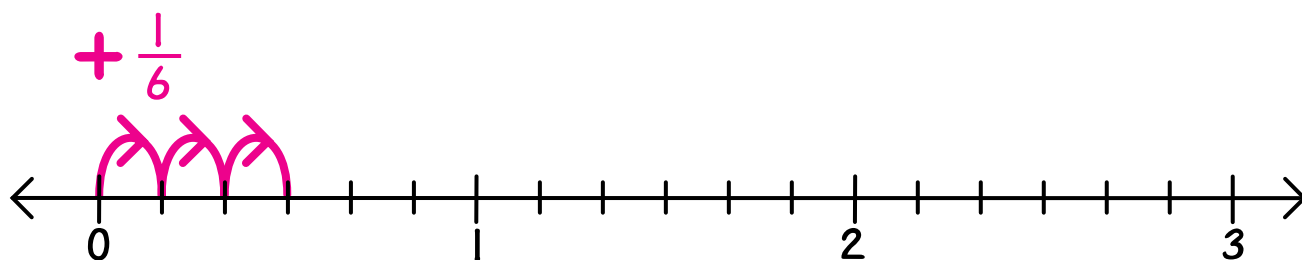
$$3 \div \frac{1}{4} = \underline{\hspace{2cm}}$$



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



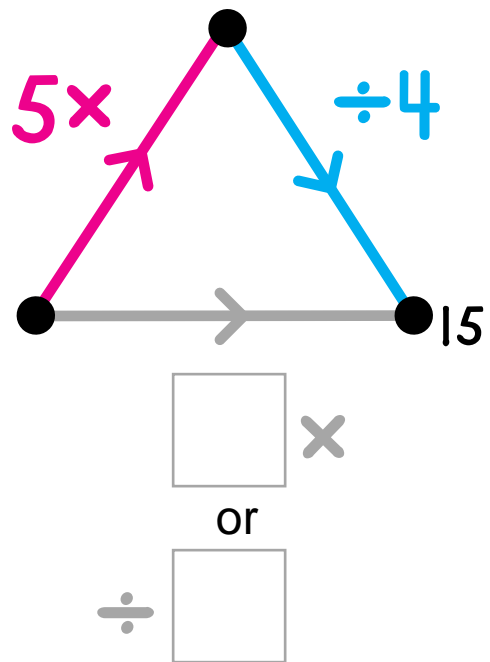
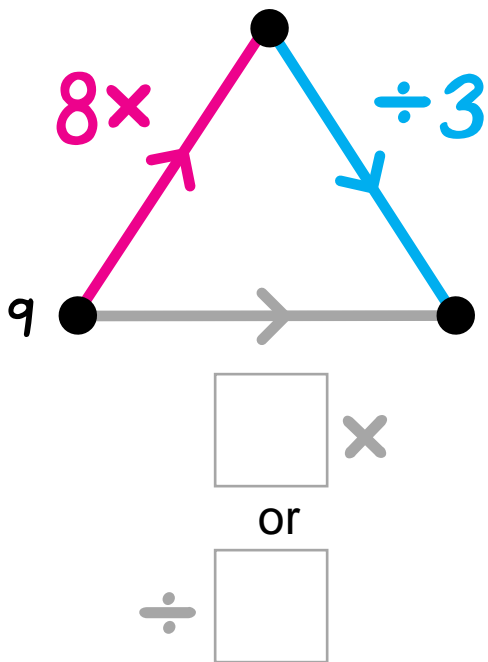
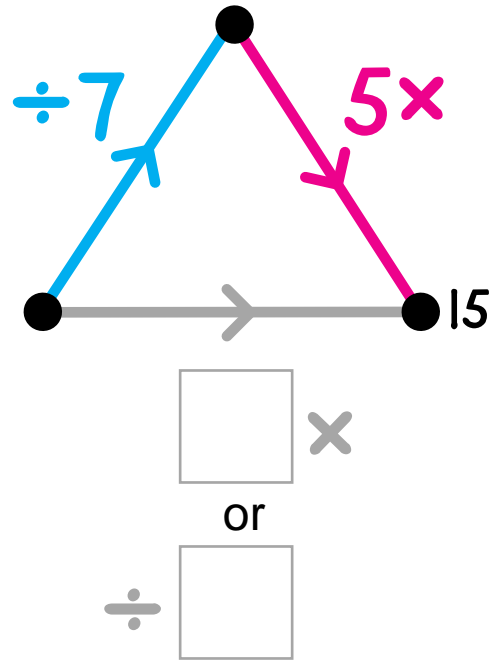
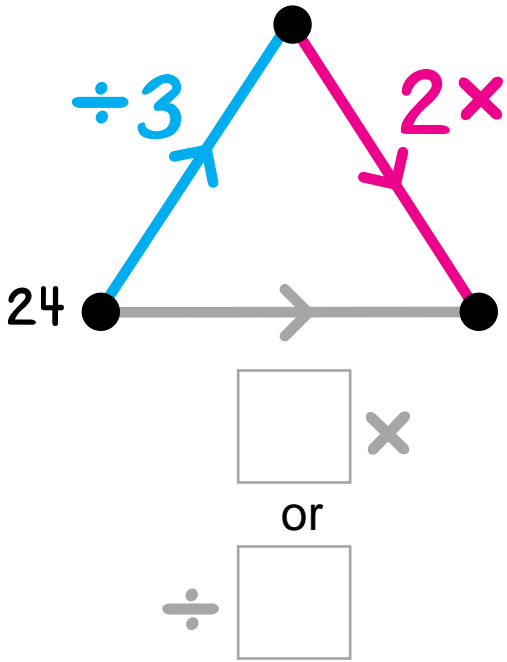
$$1 \frac{1}{2} \div \frac{1}{6} = \underline{\hspace{2cm}}$$



Name \_\_\_\_\_

N5 \*\*\*

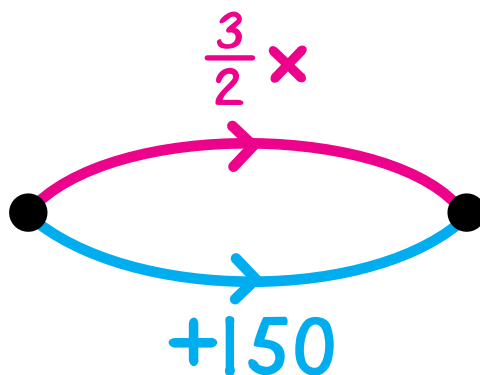
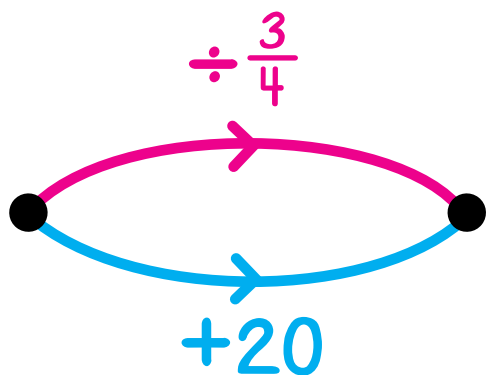
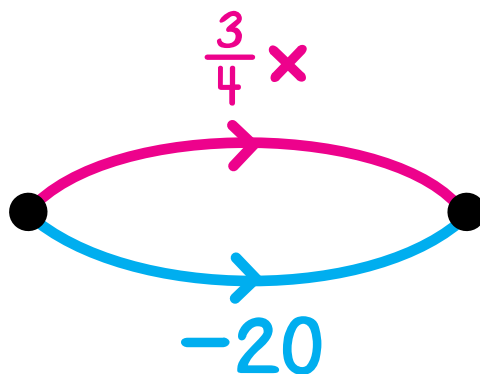
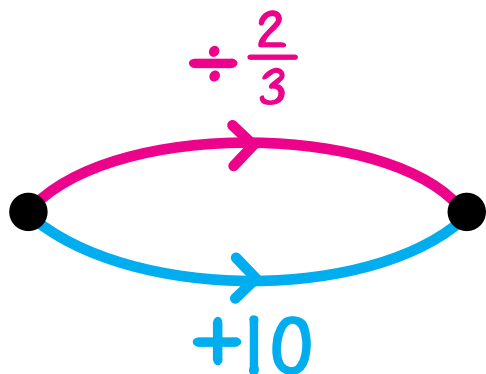
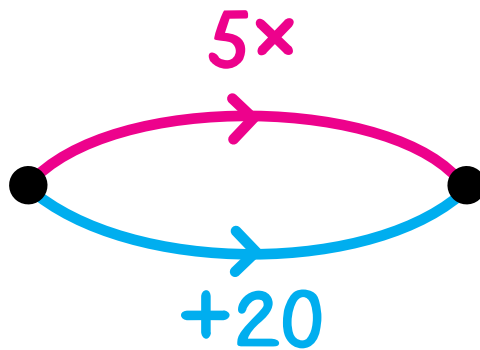
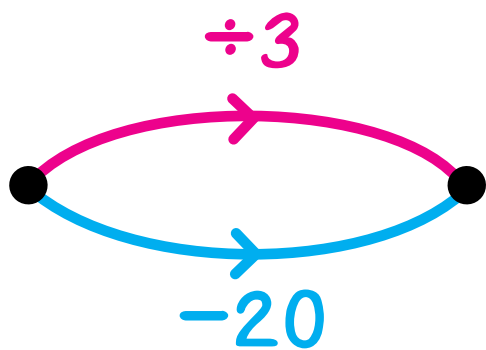
Label the dots and fill in the boxes for the arrows.



Name \_\_\_\_\_

N5      \*\*\*

Label the dots.





Name \_\_\_\_\_

N9

\*

One number in each number sentence is missing a decimal point.  
Put a decimal point in this number to make the calculation correct.

$$1.26 \times 26.98 = 339948$$

$$17.35 \times 0.5 = 8675$$

$$9.84 \times 6.95 = 68388$$

$$4274 \times 2.29 = 97.8746$$

$$19.638 \times 7207 = 1415.31066$$

$$9175 \times 7.6 = 69.73$$

Name \_\_\_\_\_

N9

\*\*

Write a decimal name for each fraction.

Example:  $\frac{23}{10} = 23 \div 10 = 2.3$

$$\frac{9}{10} = \underline{\hspace{2cm}}$$

$$\frac{9}{100} = \underline{\hspace{2cm}}$$

$$\frac{85}{10} = \underline{\hspace{2cm}}$$

$$\frac{85}{100} = \underline{\hspace{2cm}}$$

$$\frac{436}{10} = \underline{\hspace{2cm}}$$

$$\frac{436}{100} = \underline{\hspace{2cm}}$$

Multiply. Show your work in the space provided.

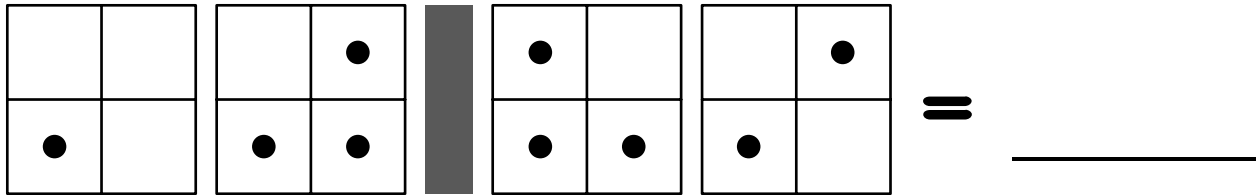
$$\begin{array}{r} 7.19 \\ \times 8.6 \\ \hline \end{array}$$

$$\begin{array}{r} 0.074 \\ \times 0.48 \\ \hline \end{array}$$

Name \_\_\_\_\_

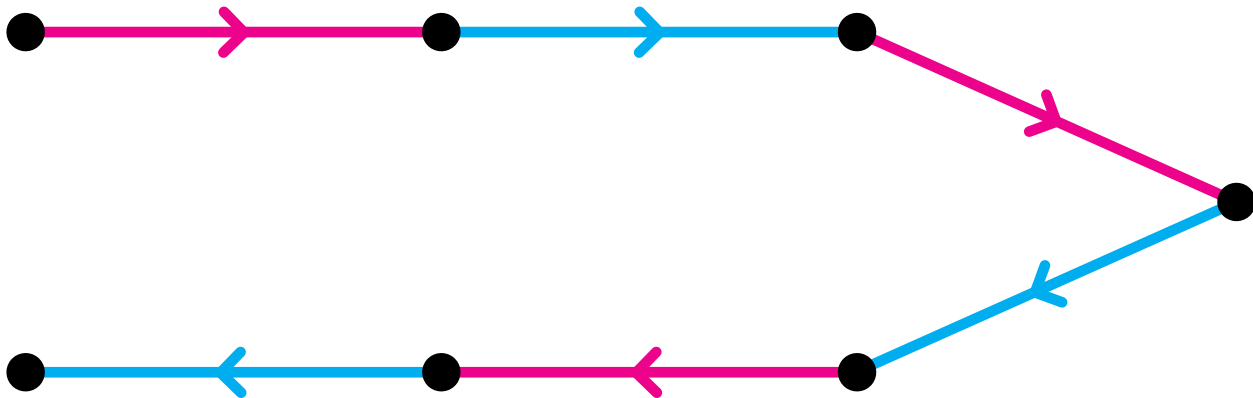
N11 \*

What number is on the Minicomputer?

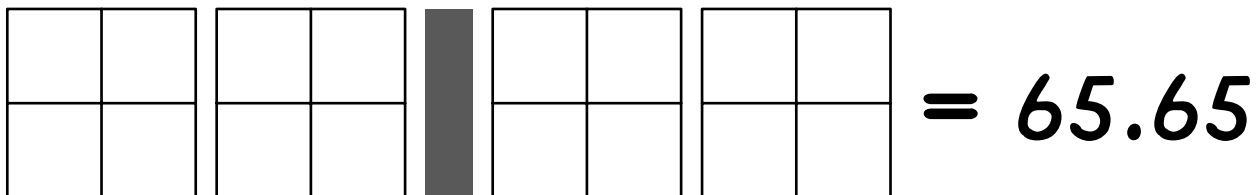


Move one checker at a time until 65.65 is on the Minicomputer. Record your moves with arrows. You may not need to use all the arrows.

Goal: 65.65

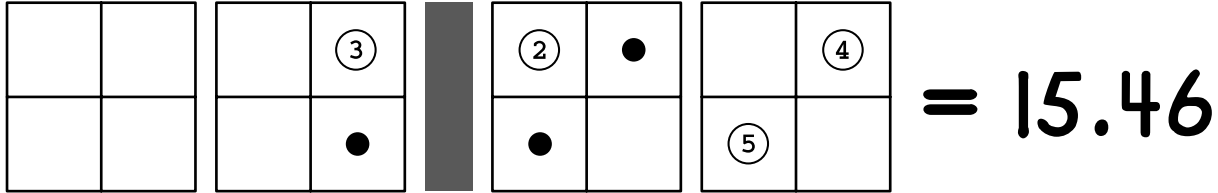


Show your final configuration of checkers for 65.65 on the Minicomputer.



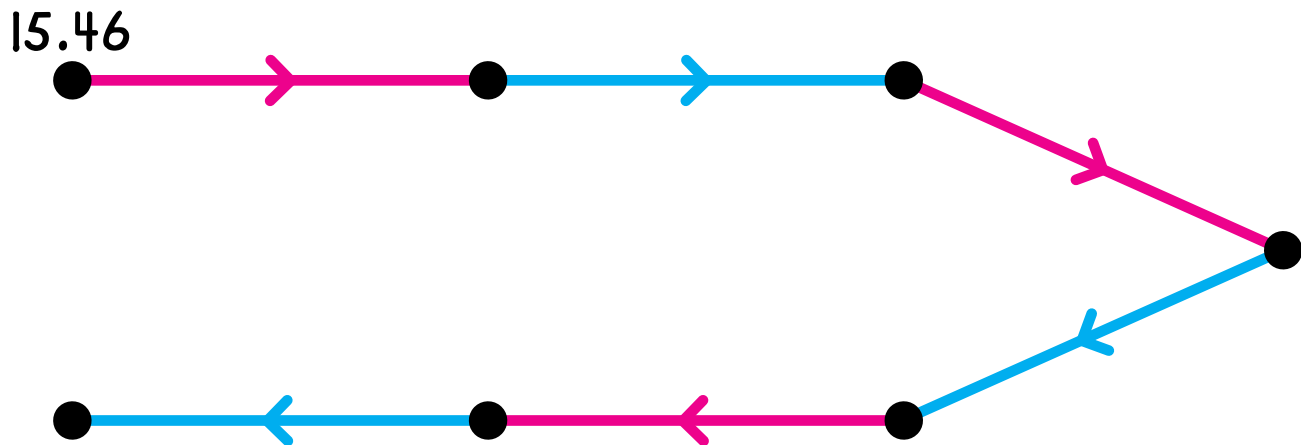
Name \_\_\_\_\_

N11      \*\*

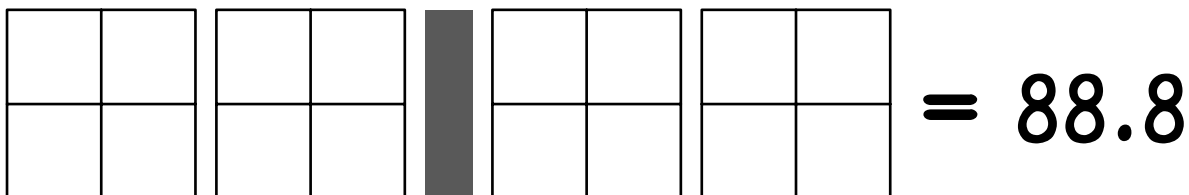


Move one checker at a time until 88.8 is on the Minicomputer. Record your moves with arrows. You may not need to use all the arrows.

Goal: 88.8

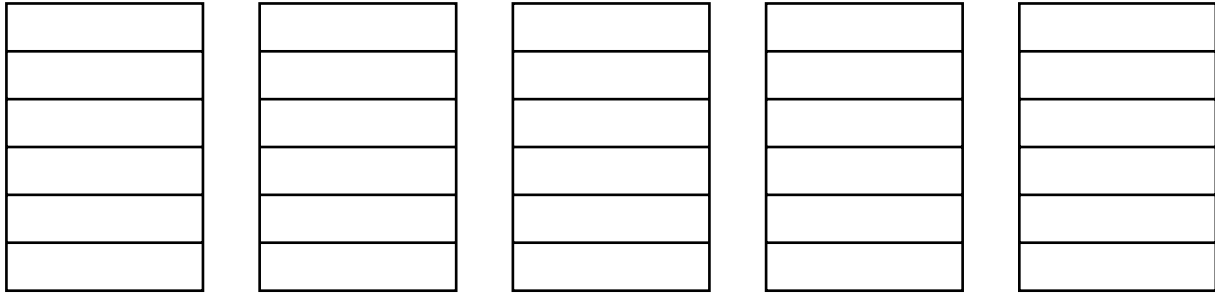


Show your final configuration of checkers for 88.8 on the Minicomputer.



Name \_\_\_\_\_

Shade  $3\frac{1}{6}$  rectangles.



Find pairs of numbers whose sum is  $3\frac{1}{6}$ .

$$\square + \triangle = 3\frac{1}{6}$$

$2\frac{5}{6}$	
$1\frac{1}{2}$	
	$\frac{2}{3}$

Name \_\_\_\_\_

Write at least five equivalent fractions for  $\frac{4}{5}$ .



Write at least five equivalent fractions for  $\frac{3}{4}$ .



Complete the calculations.

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

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

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

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

Name \_\_\_\_\_

N15      \*\*\*

Draw as many red arrows as possible. Use your calculations from N15\*\*.

is less than  


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

●

$$\frac{4}{5} \times \frac{3}{4}$$

●

●

$$\frac{4}{5} - \frac{3}{4}$$

●

$$\frac{4}{5} \div \frac{3}{4}$$

Circle the least number and draw a box around the greatest number.

Name \_\_\_\_\_

N15 \*\*\*\*\*

Complete the calculations. Show your work.

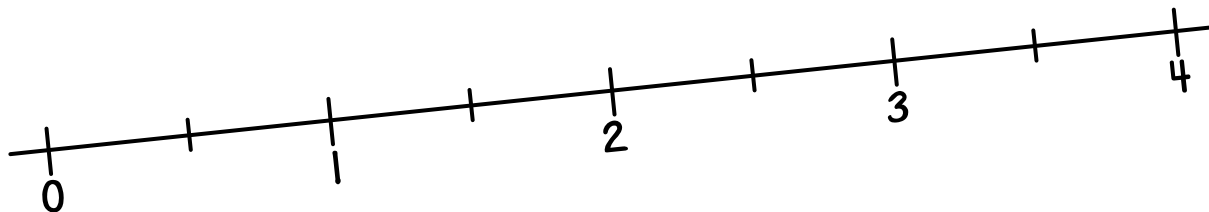
$$\frac{5}{3} + \frac{3}{2} = \underline{\hspace{10cm}}$$

$$\frac{5}{3} - \frac{3}{2} = \underline{\hspace{10cm}}$$

$$\frac{5}{3} \times \frac{3}{2} = \underline{\hspace{10cm}}$$

$$\frac{5}{3} \div \frac{3}{2} = \underline{\hspace{10cm}}$$

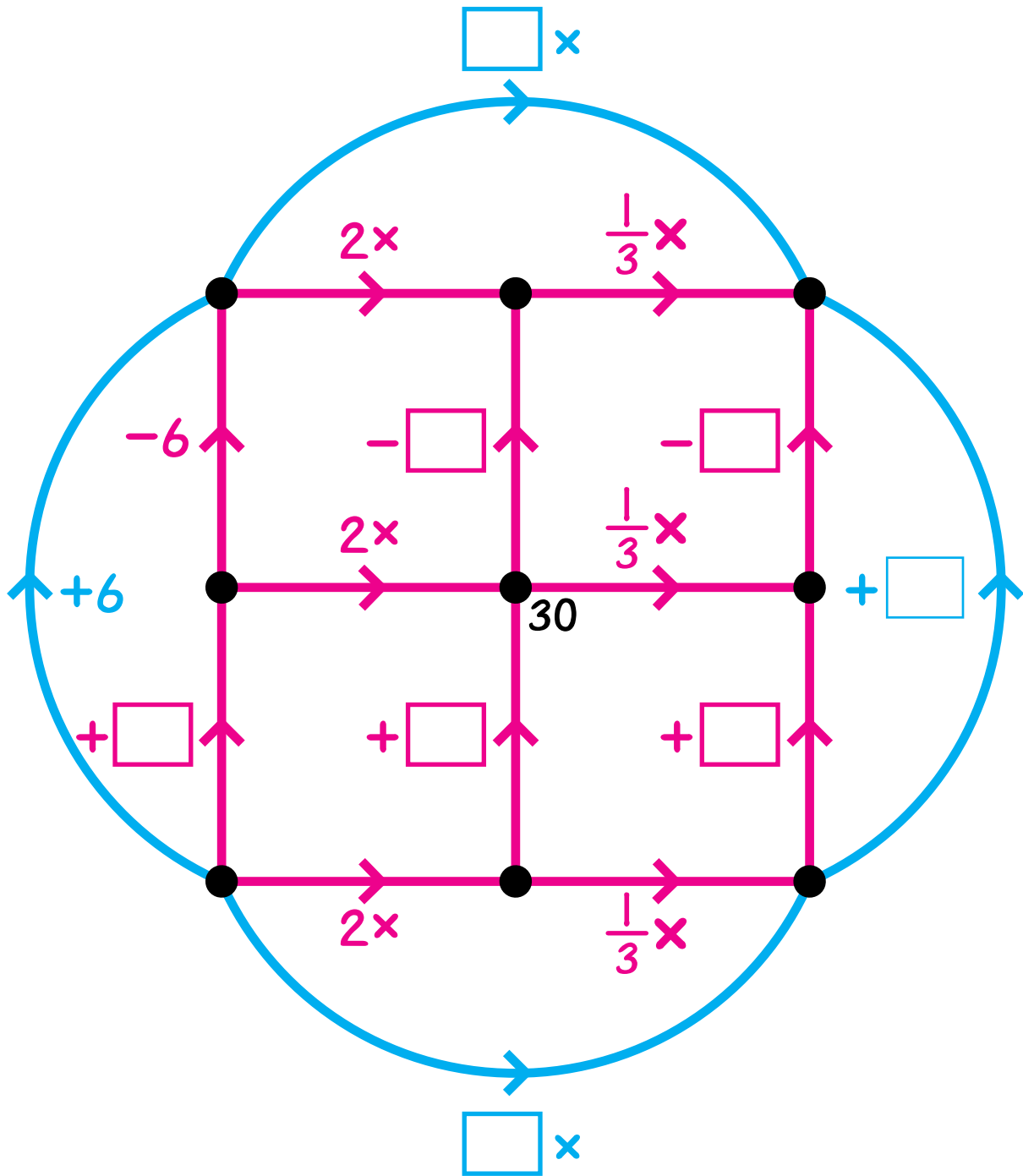
For each number above, draw and label a dot to show its approximate location on this number line.





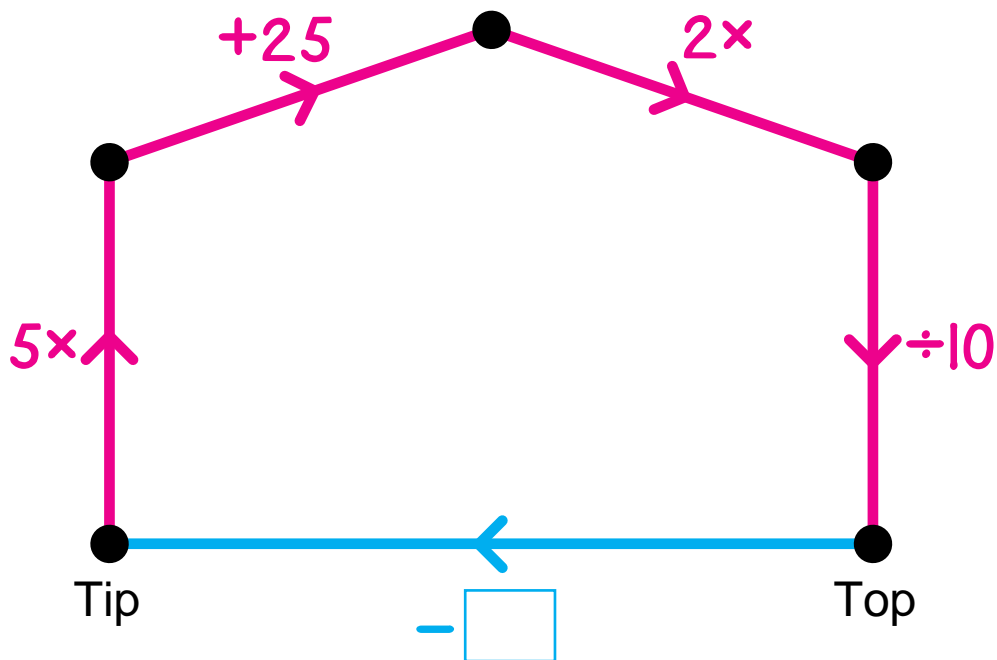
Name \_\_\_\_\_

Label the dots and fill in the boxes for the arrows.



Name \_\_\_\_\_

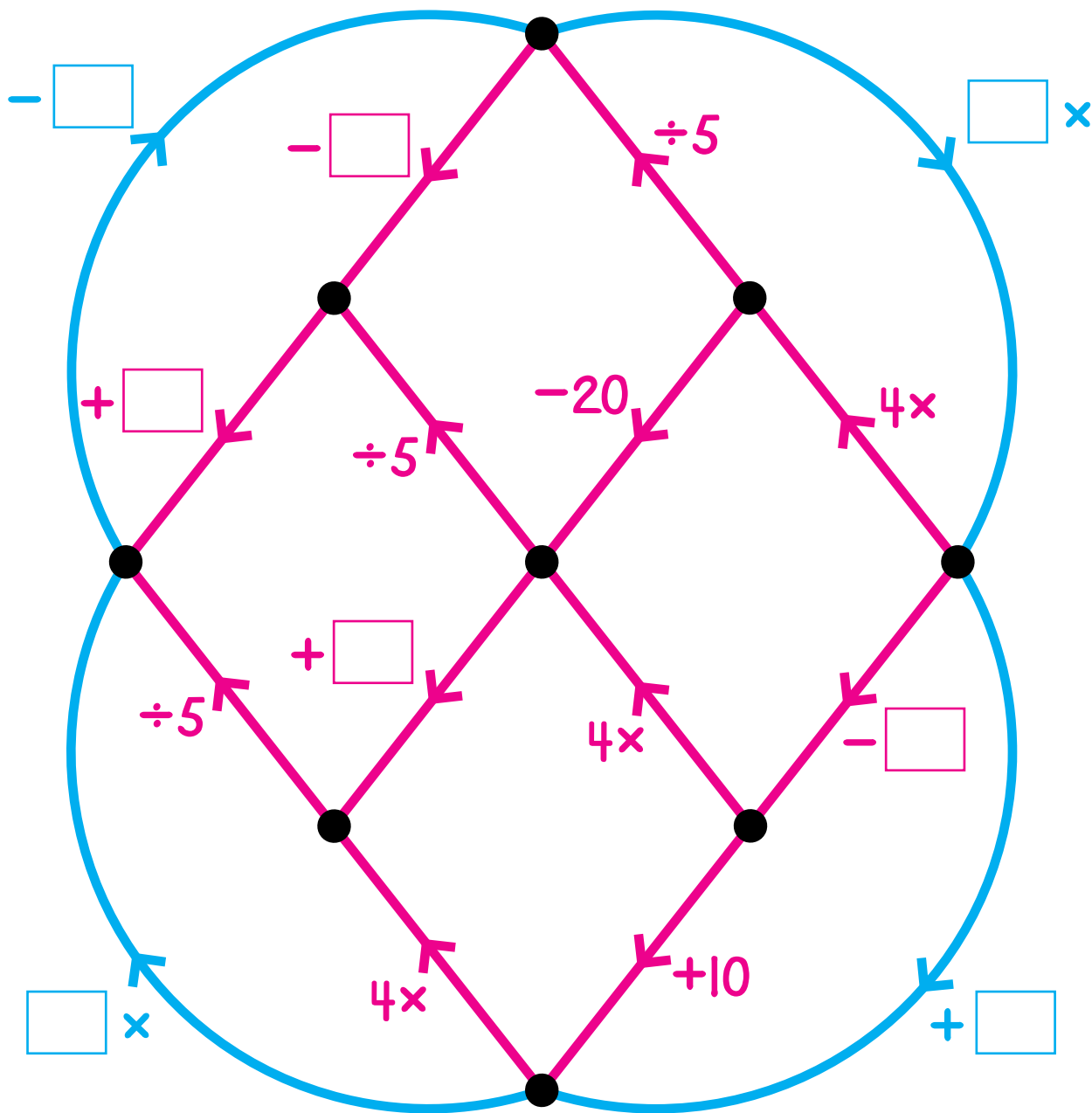
Fill in the box for the arrow and complete the table.



Tip	Top
3	
	15
$\hat{3}$	
0.4	
	5.2

Name \_\_\_\_\_

Fill in the boxes for the arrows.



Name \_\_\_\_\_

Put these numbers in the string picture.

$5 \times 7$

$3^3$

$125$

$9$

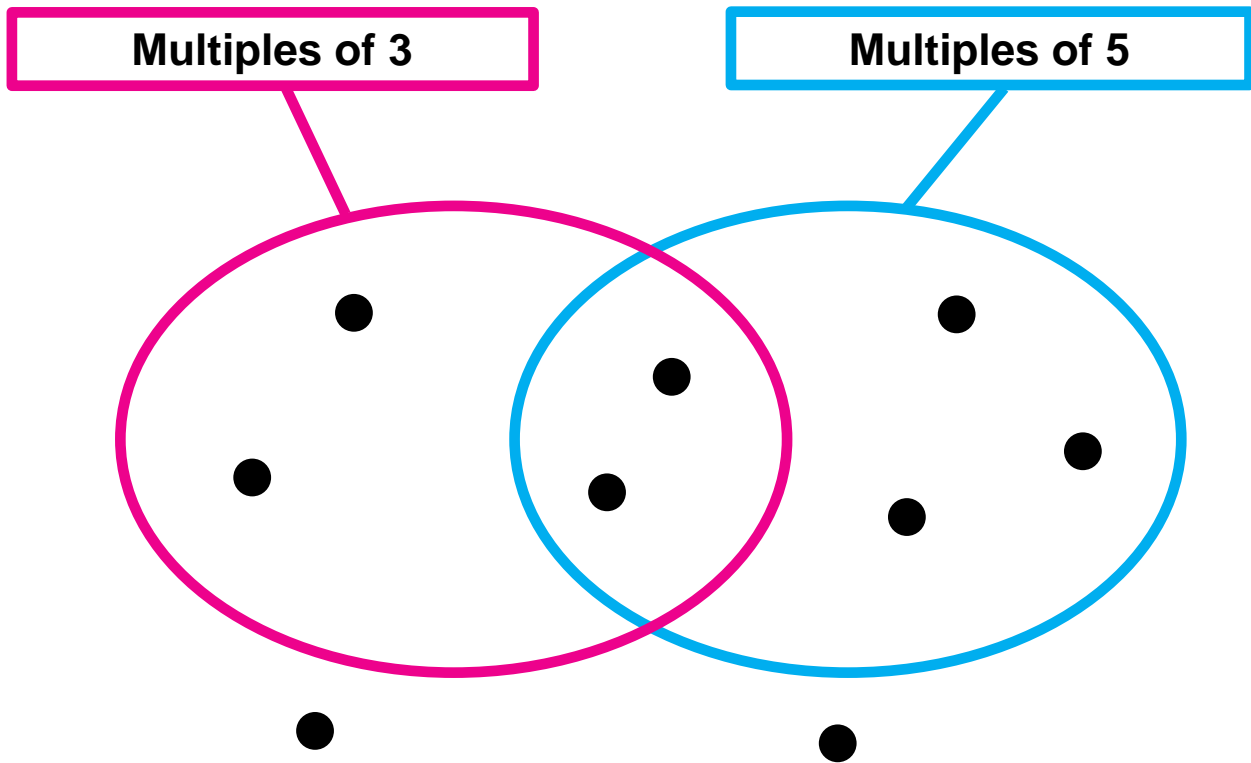
$3 \times 5$

$5^2$

$2^3$

$2 \times 7$

$3^3 \times 5^2$



Name \_\_\_\_\_

N22      \*\*

Write 70 as a product of prime numbers (prime factorization).  
Then list several multiples and all the positive divisors of 70.  
Write each number in the lists as a product of primes.

**Prime Factorization**

**70 =** \_\_\_\_\_

**Multiples of 70**

**Positive Divisors of 70**

Did you find eight divisors of 70? \_\_\_\_\_

Name \_\_\_\_\_

Draw all of the possible red and blue arrows between these dots.

is a multiple of



is a positive divisor of



$2^4 \times 3^2 \times 5$  ●

●  $2 \times 3^2$

$2^3$  ●

●  $2^5 \times 3^3 \times 7$

$2^4 \times 3^2$  ●

●  $3^2 \times 5^2$

Name \_\_\_\_\_

N22 \*\*\*\*

Locate these numbers in the string picture.

$2^2 \times 5$

$2^4 \times 5$

$2 \times 5^6$

$2 \times 3 \times 5$

$5^3$

$2^2 \times 5^2$

$2^8$

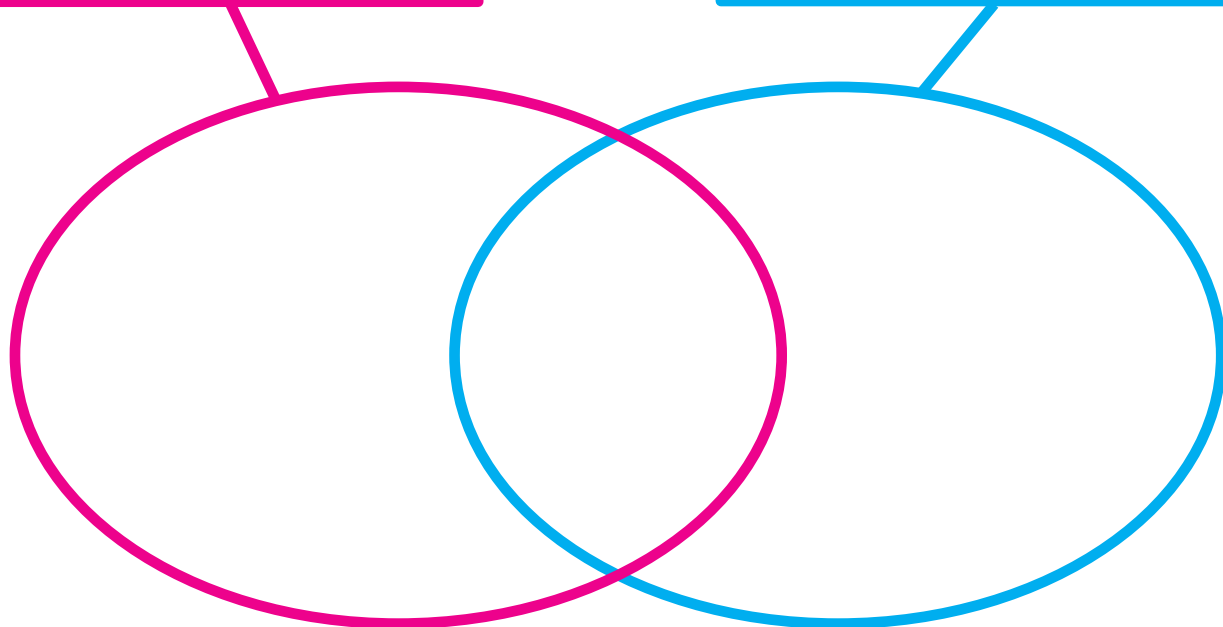
$2^6 \times 5$

$2^2 \times 5^3$

$2^4$

Positive divisors  
of  $2^3 \times 5^4$

Positive divisors  
of  $2^5 \times 5^2$



Name \_\_\_\_\_

N23

Some problems on an Egyptian papyrus involved sharing loaves of bread among ten people. For each problem, write the solution as a unit fraction or as a sum of different unit fractions. Two problems are done for you.

Number of loaves	Number of people	Solution
2	10	$\frac{2}{10} = \frac{1}{5}$
3	10	$\frac{3}{10} = \frac{2}{10} + \frac{1}{10} = \frac{1}{5} + \frac{1}{10}$
4	10	$\frac{4}{10} =$
5	10	$\frac{5}{10} =$
6	10	$\frac{6}{10} =$
7	10	$\frac{7}{10} =$
8	10	$\frac{8}{10} =$
9	10	$\frac{9}{10} =$



Name \_\_\_\_\_

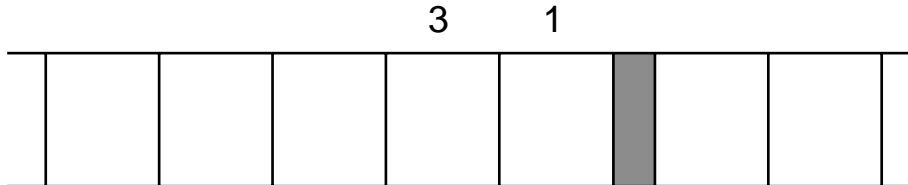
N24 \*

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

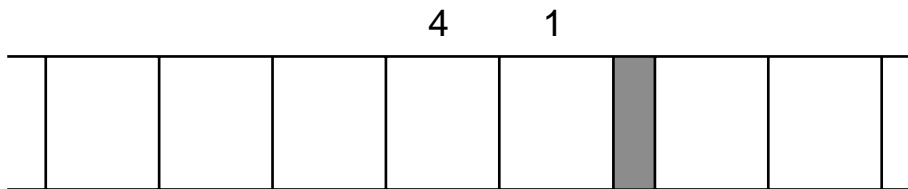
Decimal Writing

Base Three Writing

34



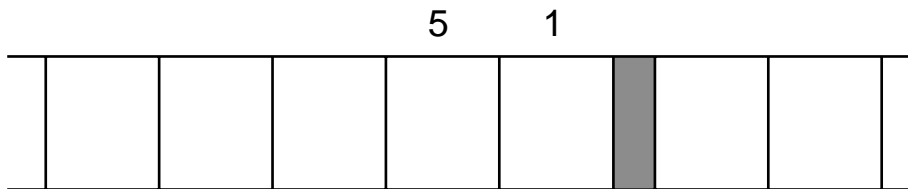
Base Four Writing



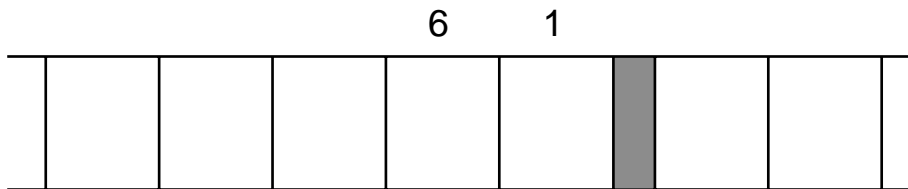
2013

Base Five Writing

100



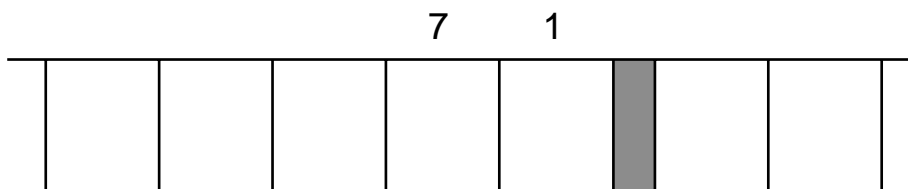
Base Six Writing



100

Base Seven Writing

$135\frac{1}{7}$



Name \_\_\_\_\_

N24 \*\*

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

Decimal  
Writing

Base Eight  
Writing

8 1

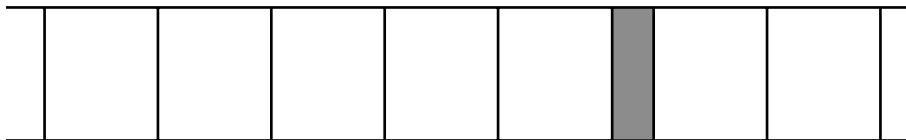


2063.2

Base Nine  
Writing

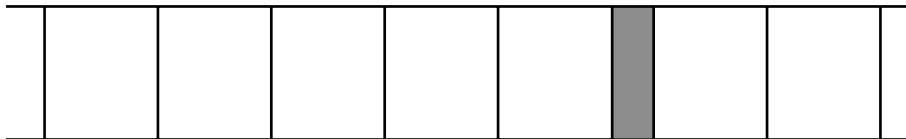
1515  $\frac{2}{9}$

9 1



Base Ten  
Writing

10 1

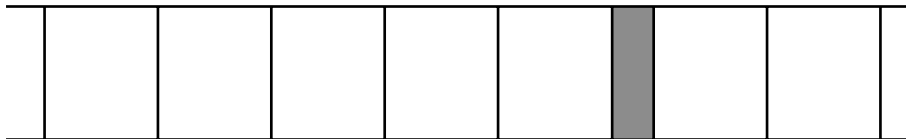


391.25

Base Eleven  
Writing

1343  $\frac{1}{11}$

11 1



Base Twelve  
Writing

12 1



391.25

Name \_\_\_\_\_

Fill in the boxes showing the base for each calculation.

**Calculation**

**Base**

$$15 + 12 = 30$$

$$2 \times 2 = 10$$

$$22 + 20 = 112$$

$$6 \times 8 = 48$$

$$100 + 10 = 110$$

$$3 \times 24 = 132$$

Name \_\_\_\_\_

Complete.

50% of 132 =

50% of  = 132

10% of 84 =

10% of  = 84

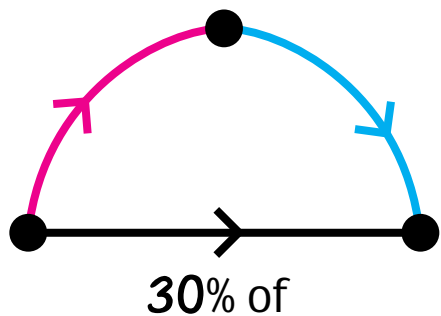
20% of 115 =

20% of  = 115

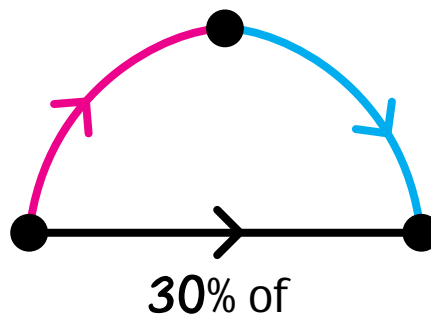
1% of 410 =

1% of  = 410

You may use the arrow pictures to help solve these problems.



All 90 students in sixth grade at Hopkins School voted for their favorite movie. *Space Cadets* won with 30% of the votes. How many students voted for *Space Cadets*? \_\_\_\_\_



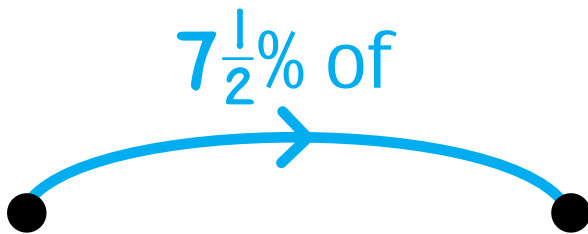
Sheila received 90 votes for student body president which is 30% of the total votes. How many students voted?  
\_\_\_\_\_

Name \_\_\_\_\_



Lou has \$54.50 and wants to buy an anniversary present for his parents. He considers a silver tray costing \$48. However, Lou must remember that there is a 15% combined luxury and sales tax.  
How much tax is there on the \$48 silver tray? \_\_\_\_\_

Does Lou have enough money to buy the silver tray? \_\_\_\_\_  
If yes, how much change will he receive? \_\_\_\_\_  
If no, how much more money does he need? \_\_\_\_\_



Lou also considers a large gardenia plant costing \$50. There is only a  $7\frac{1}{2}\%$  sales tax on the plant.  
How much tax is there on the gardenia plant? \_\_\_\_\_

Does Lou have enough money to buy the gardenia plant? \_\_\_\_\_  
If yes, how much change will he receive? \_\_\_\_\_  
If no, how much more money does he need? \_\_\_\_\_

Name \_\_\_\_\_

**A**

**Spring Sale!**  
 25% off all winter wear.  
 Additional 10% off on items originally priced \$50 or more.

**B**

**Spring Sale!**  
 $\frac{1}{3}$  off all winter clothing.  
 Make room for Spring!

**C**

**Spring Sale!**  
 30% off every winter clothing item in stock.

Three nearby stores are having winter clearance sales. Some items are available at all three stores; some only at two of the three stores. Fill in this table to show where to pay the least amount for individual items.

Item	Original Price	Available at	Best Discounted Price (at which store)	7½% Sales Tax	Best Total Cost
Sweater	\$44.40	A, B, & C			
Boots	\$39.75	A & C			
Coat	\$78	A, B, & C			
Jacket	\$62	A & B			
Suit	\$210.90	B & C			

Name \_\_\_\_\_

N26 \* \* \* \*

**TIRE SALE!**  
All prices reduced 15%

1. Ms. Thomas saved \$12 by buying two tires at the tire sale.  
What was the original price of the two tires? \_\_\_\_\_  
How much did Ms. Thomas pay for the tires? \_\_\_\_\_
2. You can buy a set of luggage for \$160 cash. If you buy it on the installment plan, you must make 12 monthly payments of \$15.25 each. What is the total cost to buy the luggage on the installment plan? \_\_\_\_\_  
What percent over the cash price is the installment plan price? \_\_\_\_\_

3. Drew prepares a contest box with tickets like these:

**SORRY,  
TRY AGAIN**

**WINNER**

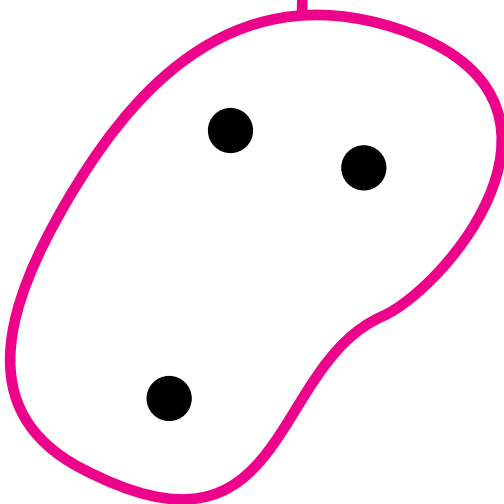
He puts 500 tickets in the box of which 1% are **WINNER** tickets.  
Now Drew wants to take out some of the **SORRY, TRY AGAIN** tickets so that 2% of the tickets will be **WINNER** tickets. How many **SORRY, TRY AGAIN** tickets should he remove? \_\_\_\_\_

4. Suppose a customer buys an item from Store **C** (see Worksheet N26\*\*\*). Would the total cost be different if the store:
  - discounted the original price first and then added sales tax, or
  - added sales tax to the original price and then discounted that amount? \_\_\_\_\_

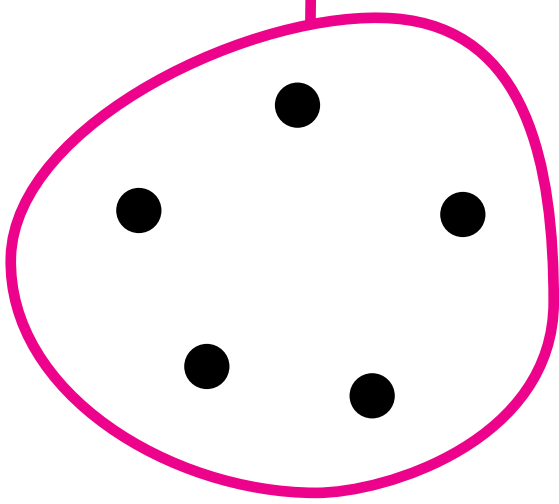
Name \_\_\_\_\_

Label the dots.

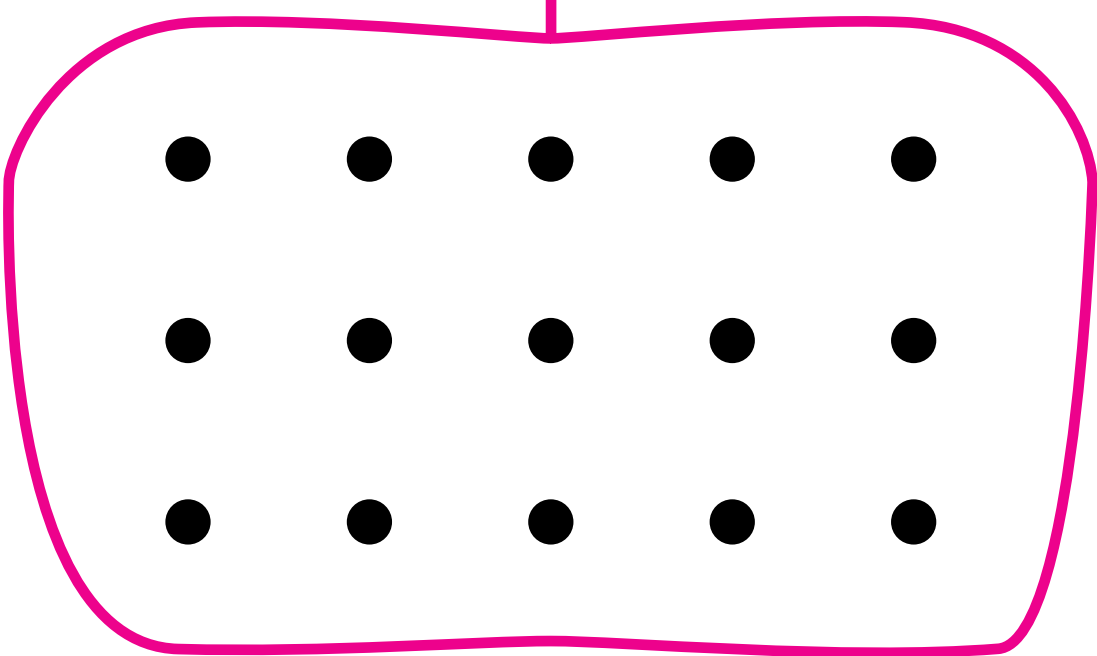
Positive divisors  
of  $5^2$



Positive divisors  
of  $2^4$



Positive divisors of  $2^4 \times 5^2$





Name \_\_\_\_\_

Put these numbers in the string picture.

1

2

$2^2 \times 5^2$

5

$5^3$

$2 \times 5^3$

$2^3$

$5^4$

$2^3 \times 5$

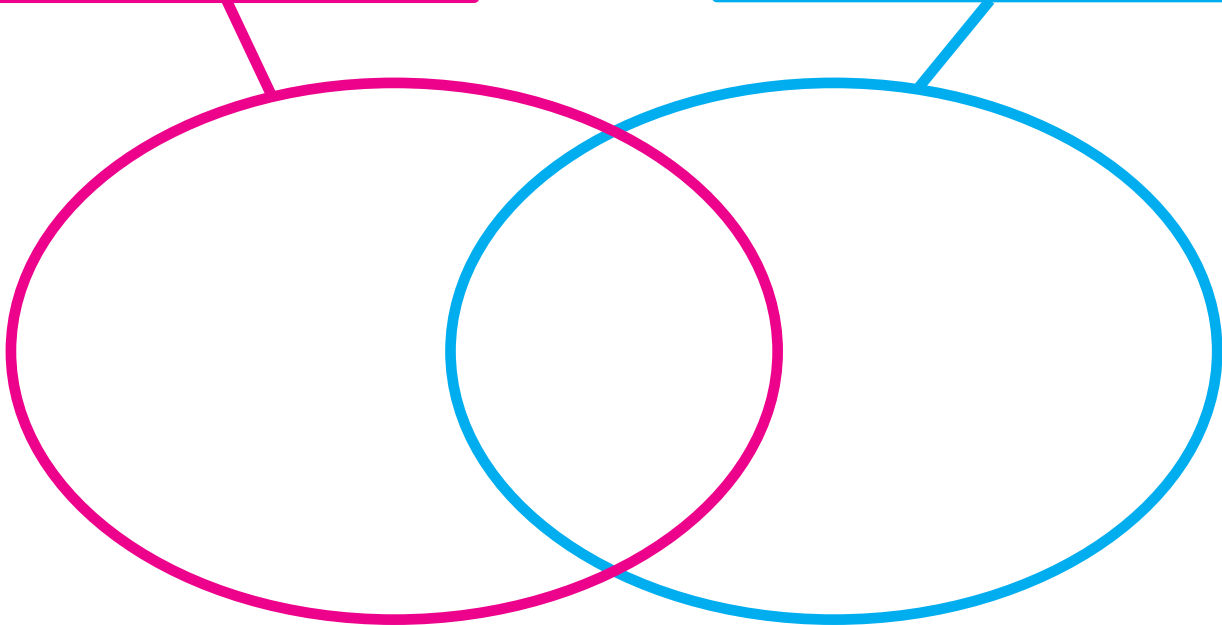
$2^5$

$2 \times 7$

$2^3 \times 5^3$

Positive divisors  
of  $2^2 \times 5^3$

Positive divisors  
of  $2^4 \times 5^2$

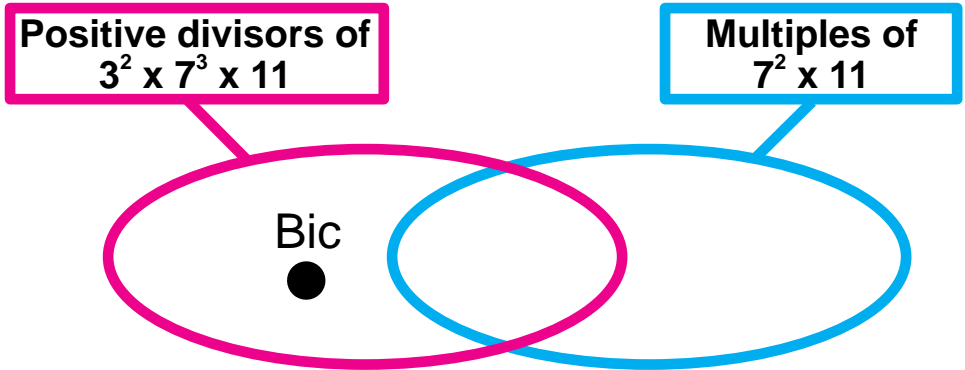


Name \_\_\_\_\_

N27 \*\*\*

Bic is a secret number.

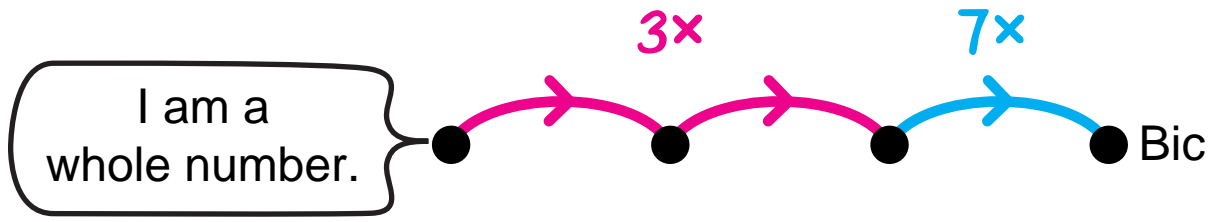
Clue 1



Bic could be \_\_\_\_\_

(Hint: There are between 15 and 20 possibilities for Bic.)

Clue 2



Bic could be \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

Clue 3

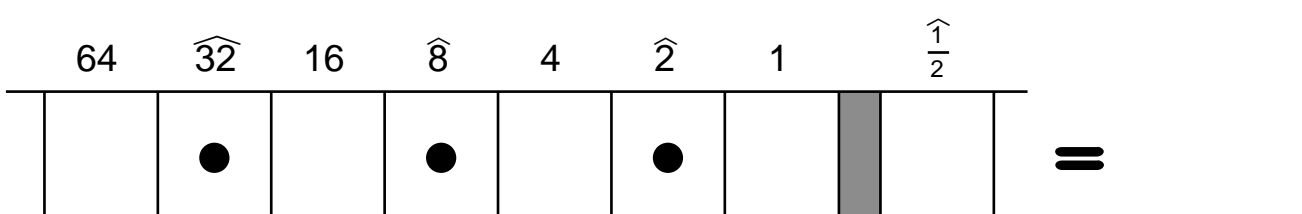
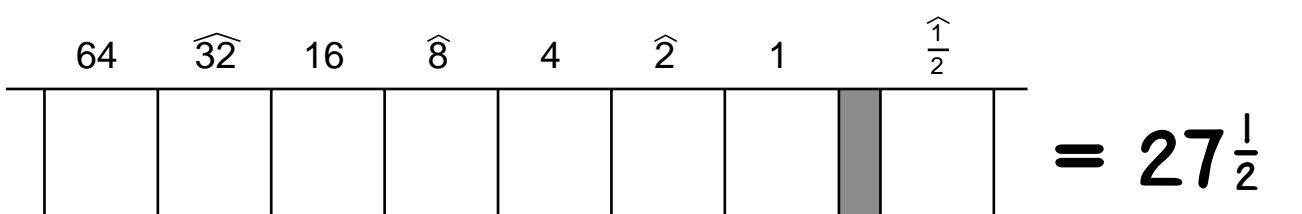
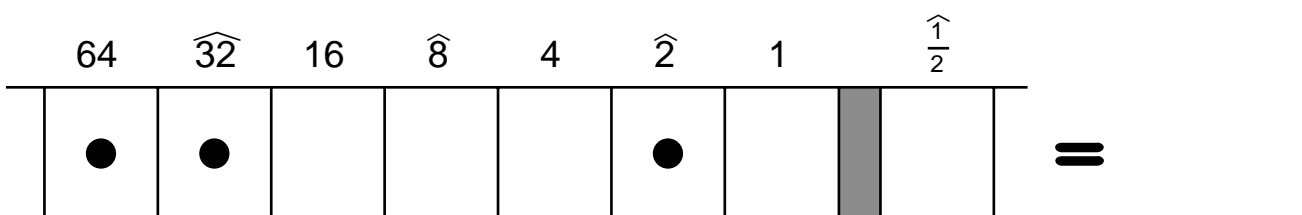
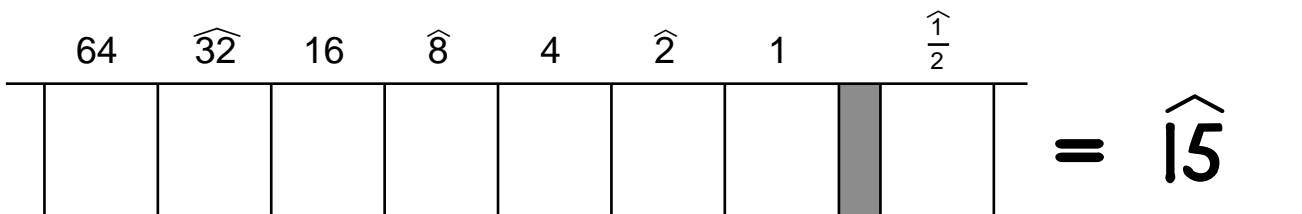
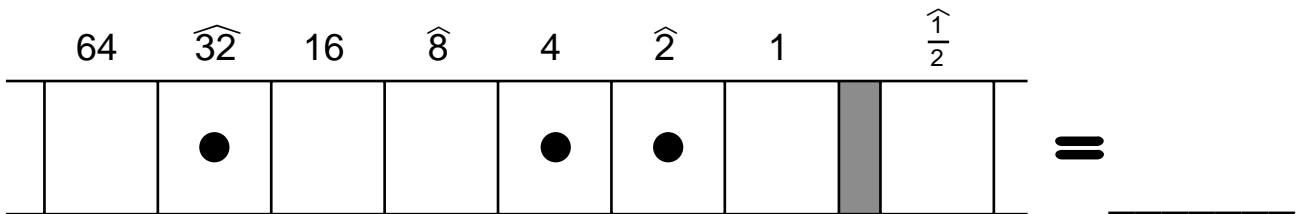
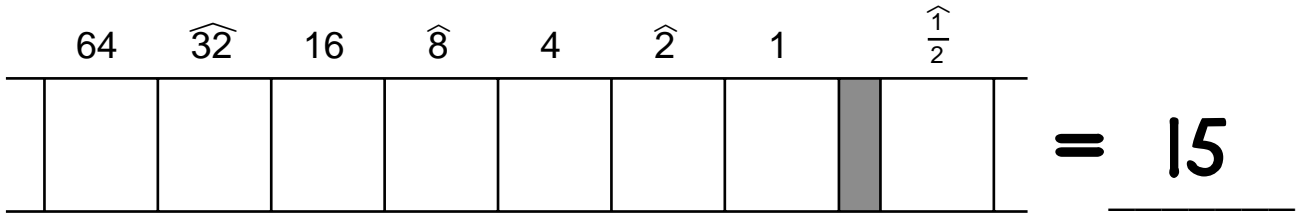
$$\text{Bic} \square (5 \times 7^3) = 7^2$$

Who is Bic? \_\_\_\_\_

Name \_\_\_\_\_

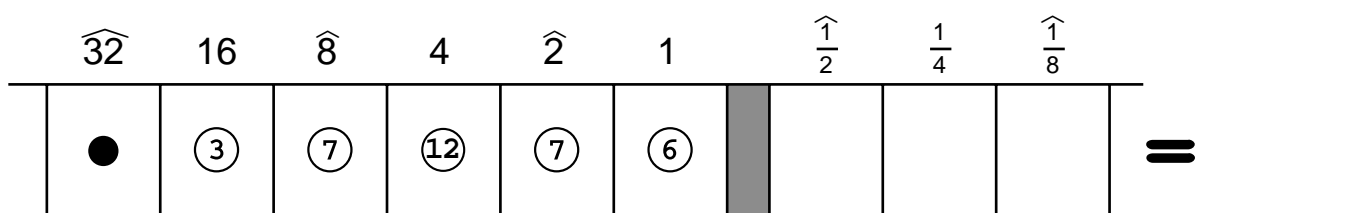
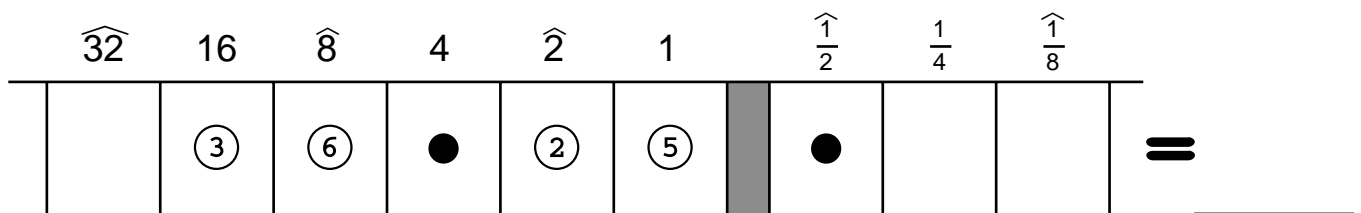
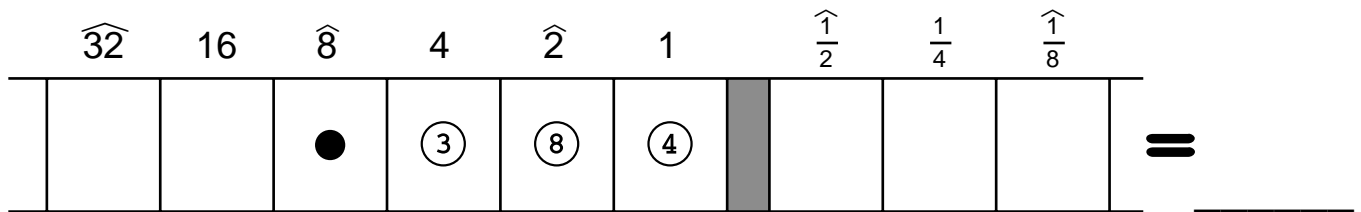
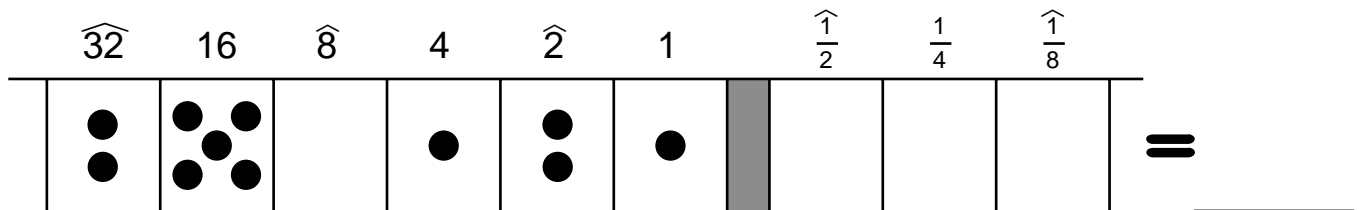
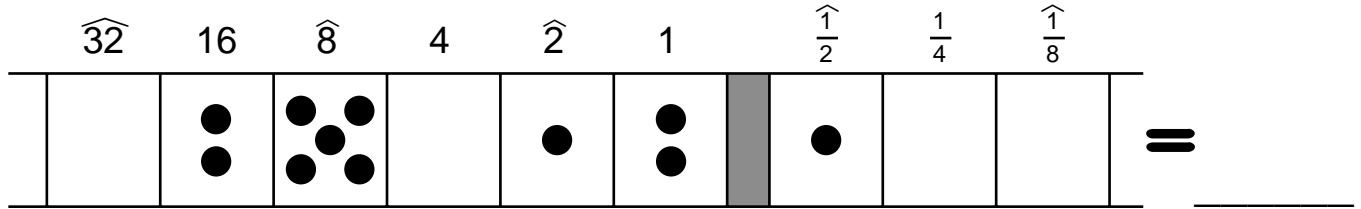
N30 \*

Complete.



Name \_\_\_\_\_

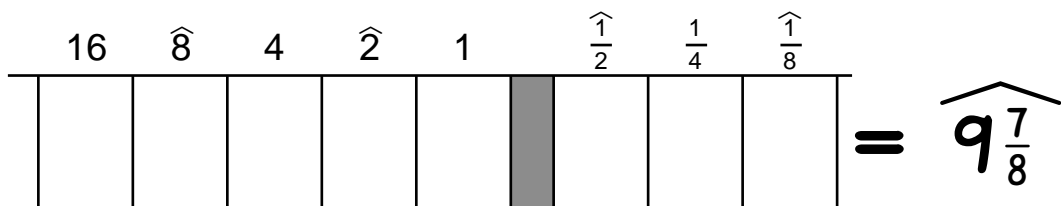
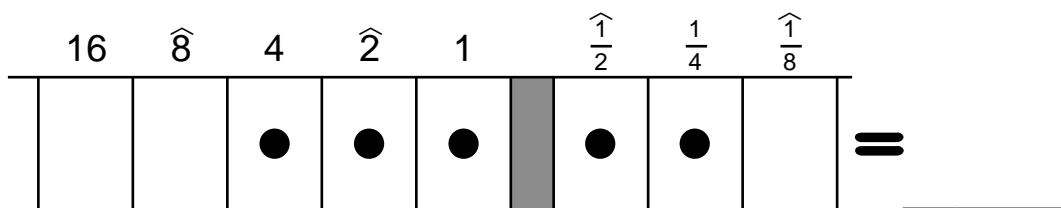
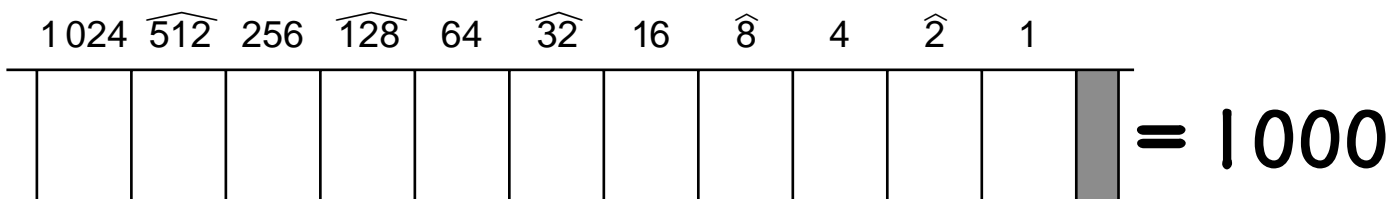
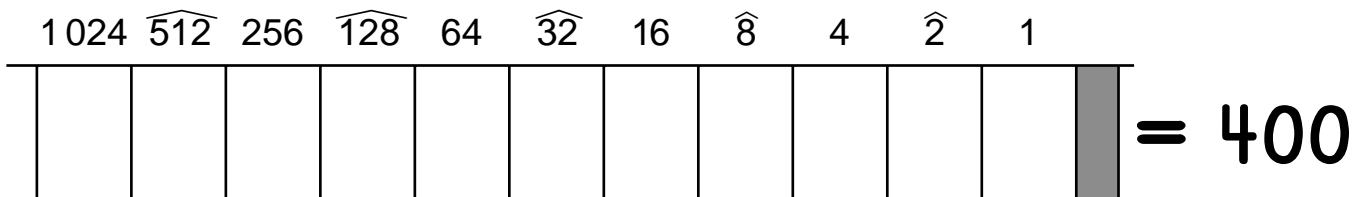
Complete.



Name \_\_\_\_\_

N30      \*\*\*

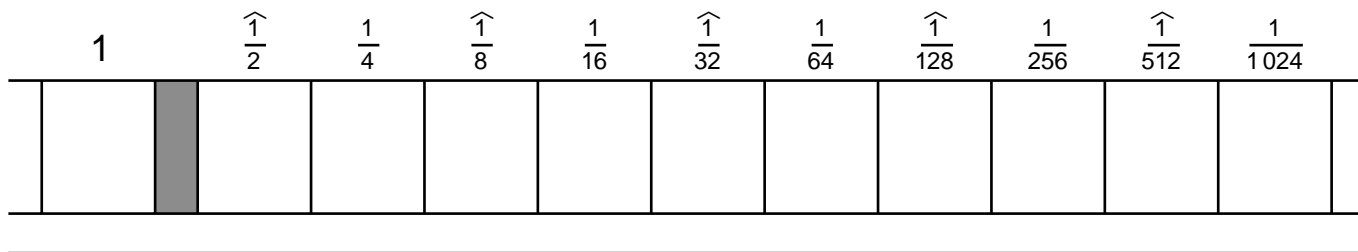
Complete using at most one checker on a board.



Name \_\_\_\_\_

N30 \*\*\*\*

Find a Base  $\hat{2}$  name for  $\frac{1}{5}$ .



$\frac{1}{5} =$  \_\_\_\_\_ Base  $\hat{2}$

Name \_\_\_\_\_

N32

\*

$$a * b = (a \div b) - 1$$

or

$$a * b = (a - b) \div b$$

Complete.

$25 * 5 = \square$

$7 * 5 = \square$

$28 * 4 = \square$

$5 * \square = \frac{2}{3}$

$42 * \square = 5$

$\frac{2}{3} * \frac{2}{7} = \square$

$\square * 6 = 0$

$6 * 0.1 = \square$

$19 * 2 = \square$

$8 * 0.2 = \square$

$\square * 8 = \hat{1}$

$\frac{1}{5} * \frac{1}{4} = \square$

Name \_\_\_\_\_

$$a * b = (a \div b) - 1$$

or

$$a * b = (a - b) \div b$$

Complete this table.

$$\square * \triangle = 6$$

35	
	3
7	
	10
3.5	
	$\frac{2}{7}$



Name \_\_\_\_\_

$$a * b = (a \div b) - 1$$

or

$$a * b = (a - b) \div b$$

Complete.

$51 * 17 = \square$

$\square * 13 = 6$

$4.5 * 0.5 = \square$

$3.5 * \square = 6$

$2.8 * 0.1 = \square$

$\square * 0.1 = 7$

$\frac{3}{2} * \frac{1}{2} = \square$

$\frac{2}{5} * \square = 1$

$\frac{5}{4} * \frac{2}{3} = \square$

$\square * \frac{1}{2} = 15$

$\frac{2}{3} * \frac{5}{9} = \square$

$\frac{3}{5} * \square = \frac{4}{5}$

Name \_\_\_\_\_

N32 \*\*\*\*

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

Complete.

$256 * 64 = \square$

$108 * \square = 9.5$

$4.8 * 4 = \square$

$\square * 4 = 8$

$12.4 * 0.4 = \square$

$17 * \square = 4.75$

$\frac{2}{3} * \frac{1}{6} = \square$

$\square * 7 = \frac{5}{8}$

$\frac{3}{8} * \frac{3}{5} = \square$

$\frac{6}{5} * \square = 2$

$\frac{2}{7} * \frac{3}{7} = \square$

$\square * \frac{5}{7} = \frac{3}{5}$



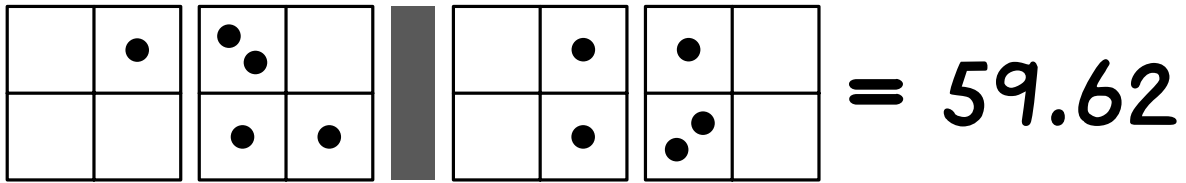




Name \_\_\_\_\_

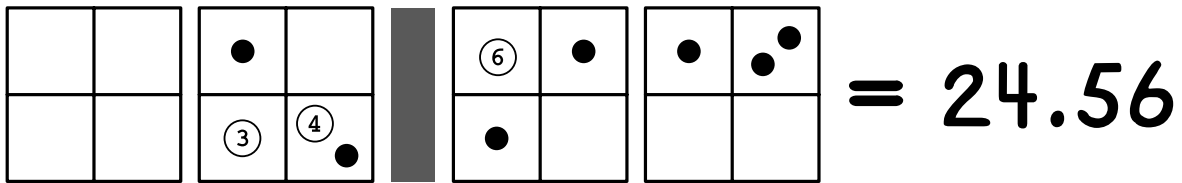
N33 \*\*\*\*\*

In each case the goal can be reached by moving exactly one checker from the square it is on to another square. Show a move that puts the goal on the Minicomputer.



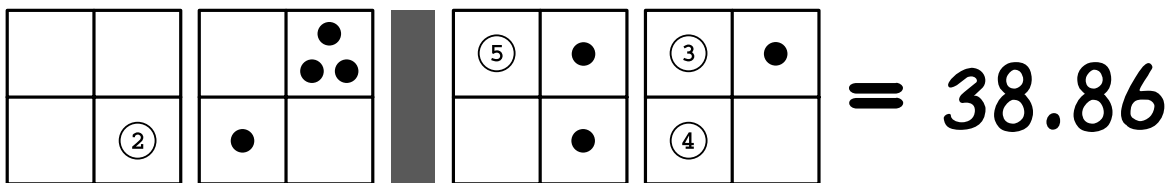
Goal: 60

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Goal: 20

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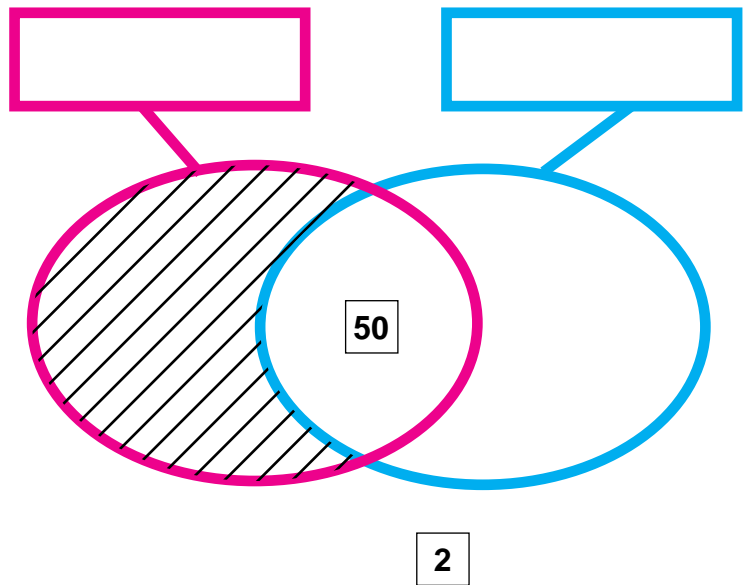


Goal: 62.62

Name \_\_\_\_\_

Use the clues in the picture to cross out labels the strings cannot have. The two strings have different labels. Label the strings.

RED	BLUE
MULTIPLES OF 2	MULTIPLES OF 2
MULTIPLES OF 3	MULTIPLES OF 3
MULTIPLES OF 4	MULTIPLES OF 4
MULTIPLES OF 5	MULTIPLES OF 5
MULTIPLES OF 10	MULTIPLES OF 10
ODD NUMBERS	ODD NUMBERS
POSITIVE PRIME NUMBERS	POSITIVE PRIME NUMBERS
GREATER THAN 50	GREATER THAN 50
LESS THAN 50	LESS THAN 50
GREATER THAN 10	GREATER THAN 10
LESS THAN 10	LESS THAN 10
POSITIVE DIVISORS OF 12	POSITIVE DIVISORS OF 12
POSITIVE DIVISORS OF 18	POSITIVE DIVISORS OF 18
POSITIVE DIVISORS OF 20	POSITIVE DIVISORS OF 20
POSITIVE DIVISORS OF 24	POSITIVE DIVISORS OF 24
POSITIVE DIVISORS OF 27	POSITIVE DIVISORS OF 27

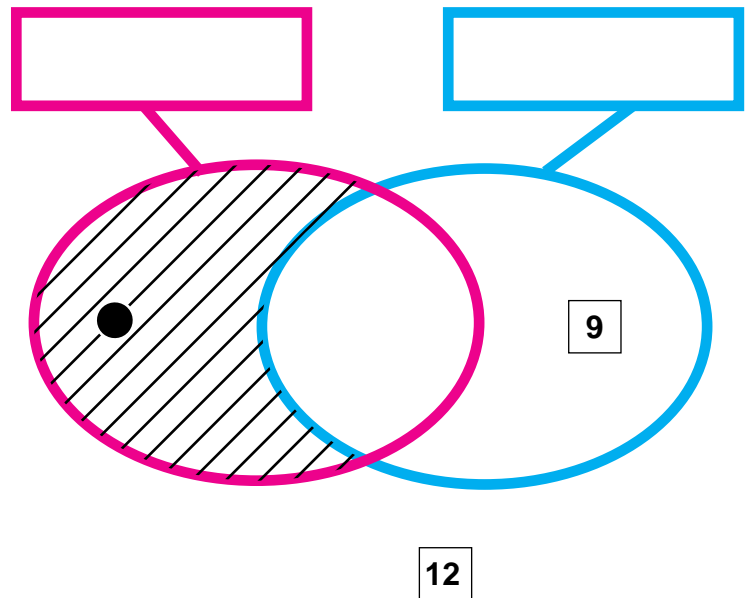


Name \_\_\_\_\_

L5      \*\*

Use the clues in the picture to cross out labels the strings cannot have. Then label the strings.

RED	BLUE
MULTIPLES OF 2	MULTIPLES OF 2
MULTIPLES OF 3	MULTIPLES OF 3
MULTIPLES OF 4	MULTIPLES OF 4
MULTIPLES OF 5	MULTIPLES OF 5
MULTIPLES OF 10	MULTIPLES OF 10
ODD NUMBERS	ODD NUMBERS
POSITIVE PRIME NUMBERS	POSITIVE PRIME NUMBERS
GREATER THAN 50	GREATER THAN 50
LESS THAN 50	LESS THAN 50
GREATER THAN 10	GREATER THAN 10
LESS THAN 10	LESS THAN 10
POSITIVE DIVISORS OF 12	POSITIVE DIVISORS OF 12
POSITIVE DIVISORS OF 18	POSITIVE DIVISORS OF 18
POSITIVE DIVISORS OF 20	POSITIVE DIVISORS OF 20
POSITIVE DIVISORS OF 24	POSITIVE DIVISORS OF 24
POSITIVE DIVISORS OF 27	POSITIVE DIVISORS OF 27

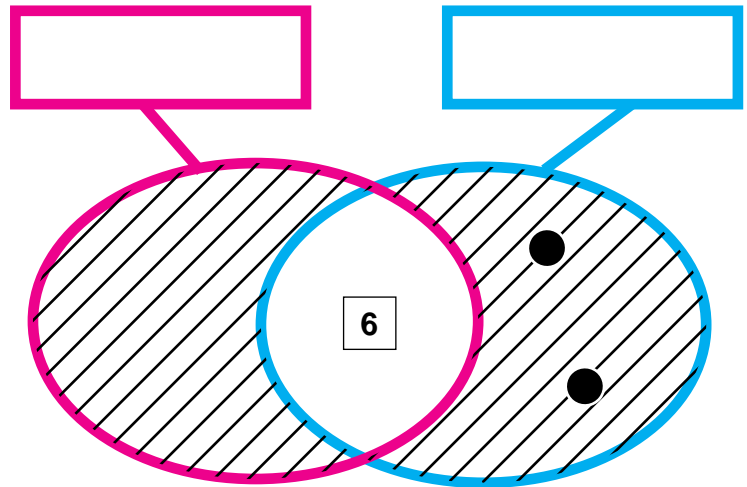




Name \_\_\_\_\_

Use the clues in the picture to cross out labels the strings cannot have. Then label the strings.

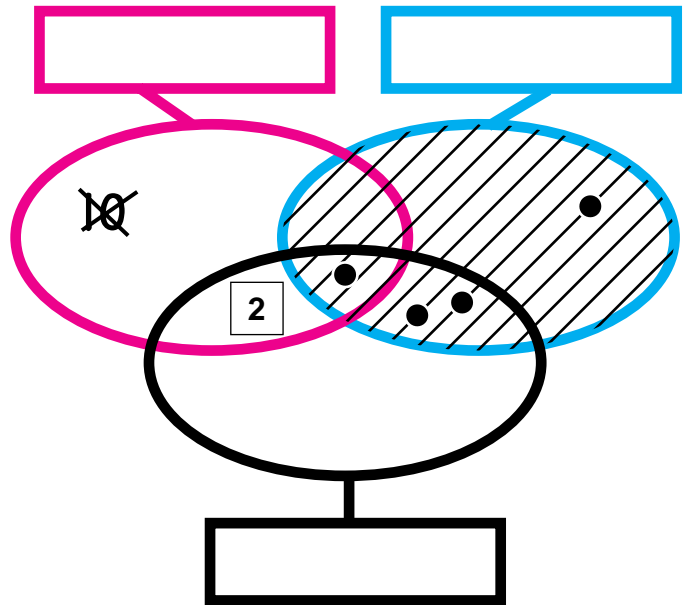
RED	BLUE
MULTIPLES OF 2	MULTIPLES OF 2
MULTIPLES OF 3	MULTIPLES OF 3
MULTIPLES OF 4	MULTIPLES OF 4
MULTIPLES OF 5	MULTIPLES OF 5
MULTIPLES OF 10	MULTIPLES OF 10
ODD NUMBERS	ODD NUMBERS
POSITIVE PRIME NUMBERS	POSITIVE PRIME NUMBERS
GREATER THAN 50	GREATER THAN 50
LESS THAN 50	LESS THAN 50
GREATER THAN 10	GREATER THAN 10
LESS THAN 10	LESSTHAN 10
POSITIVE DIVISORS OF 12	POSITIVE DIVISORS OF 12
POSITIVE DIVISORS OF 18	POSITIVE DIVISORS OF 18
POSITIVE DIVISORS OF 20	POSITIVE DIVISORS OF 20
POSITIVE DIVISORS OF 24	POSITIVE DIVISORS OF 24
POSITIVE DIVISORS OF 27	POSITIVE DIVISORS OF 27



Name \_\_\_\_\_

Use the clues in the picture to cross out labels the strings cannot have. Then label the strings.

RED	BLUE	BLACK
MULTIPLES OF 2	MULTIPLES OF 2	MULTIPLES OF 2
MULTIPLES OF 3	MULTIPLES OF 3	MULTIPLES OF 3
MULTIPLES OF 4	MULTIPLES OF 4	MULTIPLES OF 4
MULTIPLES OF 5	MULTIPLES OF 5	MULTIPLES OF 5
MULTIPLES OF 10	MULTIPLES OF 10	MULTIPLES OF 10
ODD NUMBERS	ODD NUMBERS	ODD NUMBERS
POSITIVE PRIME NUMBERS	POSITIVE PRIME NUMBERS	POSITIVE PRIME NUMBERS
GREATER THAN 50	GREATER THAN 50	GREATER THAN 50
LESS THAN 50	LESS THAN 50	LESS THAN 50
GREATER THAN 10	GREATER THAN 10	GREATER THAN 10
LESS THAN 10	LESSTHAN 10	LESS THAN 10
POSITIVE DIVISORS OF 12	POSITIVE DIVISORS OF 12	POSITIVE DIVISORS OF 12
POSITIVE DIVISORS OF 18	POSITIVE DIVISORS OF 18	POSITIVE DIVISORS OF 18
POSITIVE DIVISORS OF 20	POSITIVE DIVISORS OF 20	POSITIVE DIVISORS OF 20
POSITIVE DIVISORS OF 24	POSITIVE DIVISORS OF 24	POSITIVE DIVISORS OF 24
POSITIVE DIVISORS OF 27	POSITIVE DIVISORS OF 27	POSITIVE DIVISORS OF 27



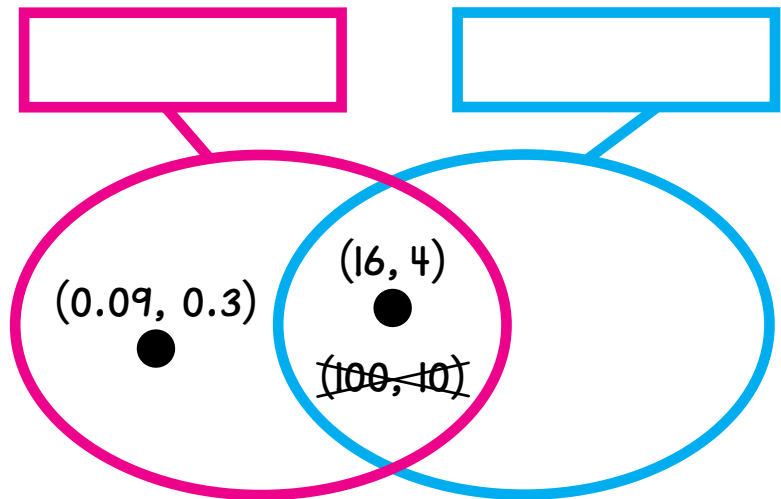
Hint: How many numbers belong in the blue string?

Name \_\_\_\_\_

Use the clues in the picture to cross out labels the strings cannot have. Then label the strings.

### The Relations Game

	Red	Blue
is less than		
is greater than		
is at least 20 less than		
is at least 20 greater than		
is a multiple of		
is a positive divisor of		
is the square of		
x10		
÷10		
x2		
÷2		
$\times \frac{2}{3}$		
$\div \frac{2}{3}$		
$\boxed{+} \boxed{2} \boxed{=}$		
$\boxed{-} \boxed{2} \boxed{=}$		
$\boxed{+} \boxed{3} \boxed{=}$		
$\boxed{-} \boxed{3} \boxed{=}$		
$\boxed{+} \boxed{4} \boxed{=}$		
$\boxed{-} \boxed{4} \boxed{=}$		
$\boxed{+} \boxed{5} \boxed{=}$		
$\boxed{-} \boxed{5} \boxed{=}$		

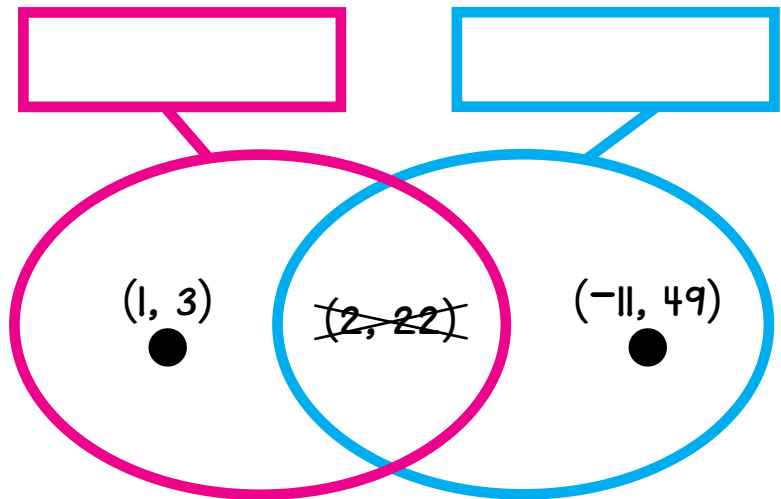


Name \_\_\_\_\_

Use the clues in the picture to cross out labels the strings cannot have. Then label the strings.

**The Relations Game**

	Red	Blue
is less than		
is greater than		
is at least 20 less than		
is at least 20 greater than		
is a multiple of		
is a positive divisor of		
is the square of		
x10		
÷10		
x2		
÷2		
$\times \frac{2}{3}$		
$\div \frac{2}{3}$		
$\boxed{+} \boxed{2} \boxed{=}$		
$\boxed{-} \boxed{2} \boxed{=}$		
$\boxed{+} \boxed{3} \boxed{=}$		
$\boxed{-} \boxed{3} \boxed{=}$		
$\boxed{+} \boxed{4} \boxed{=}$		
$\boxed{-} \boxed{4} \boxed{=}$		
$\boxed{+} \boxed{5} \boxed{=}$		
$\boxed{-} \boxed{5} \boxed{=}$		

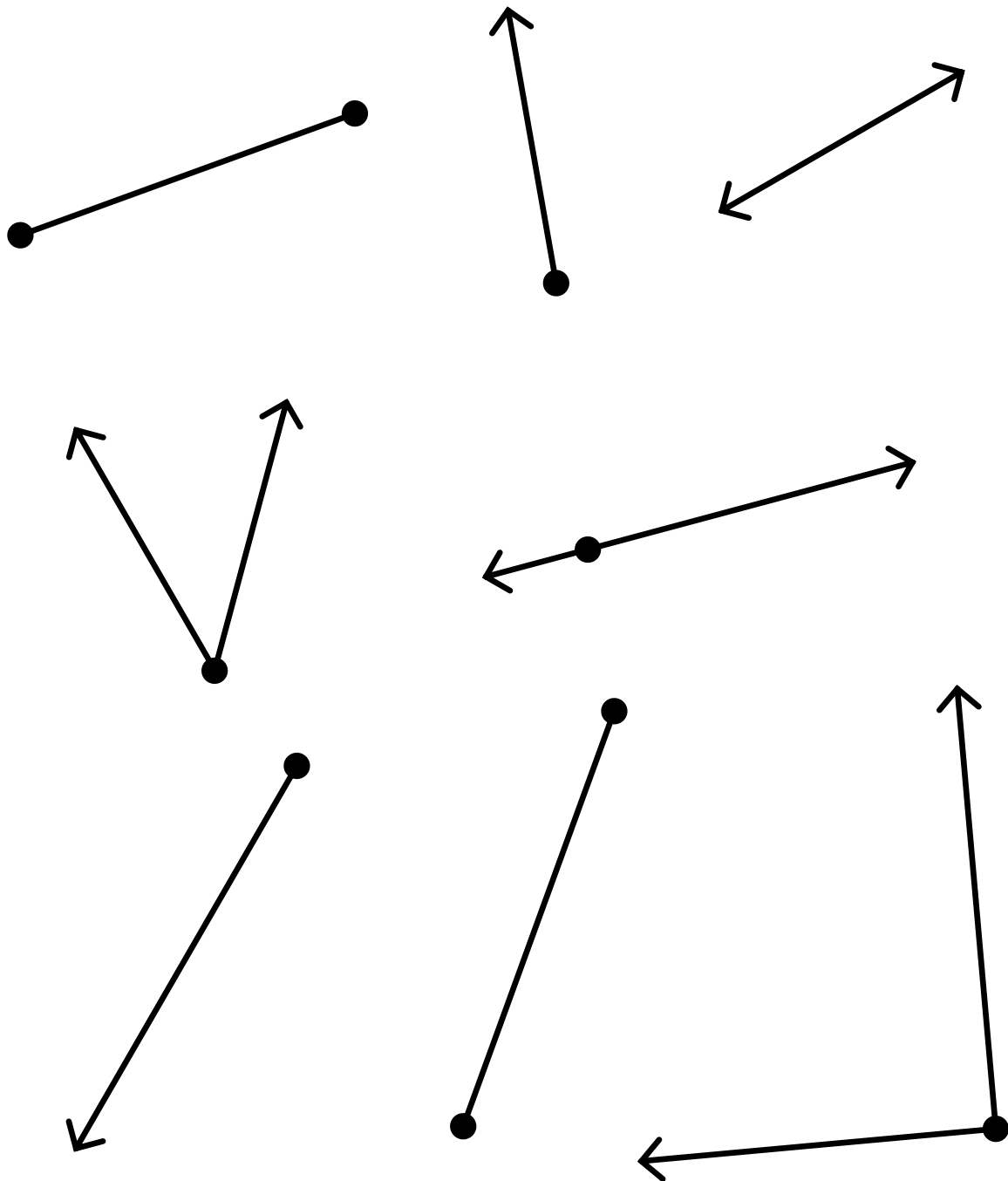


Name \_\_\_\_\_

G1(a)

Identify each of the following:

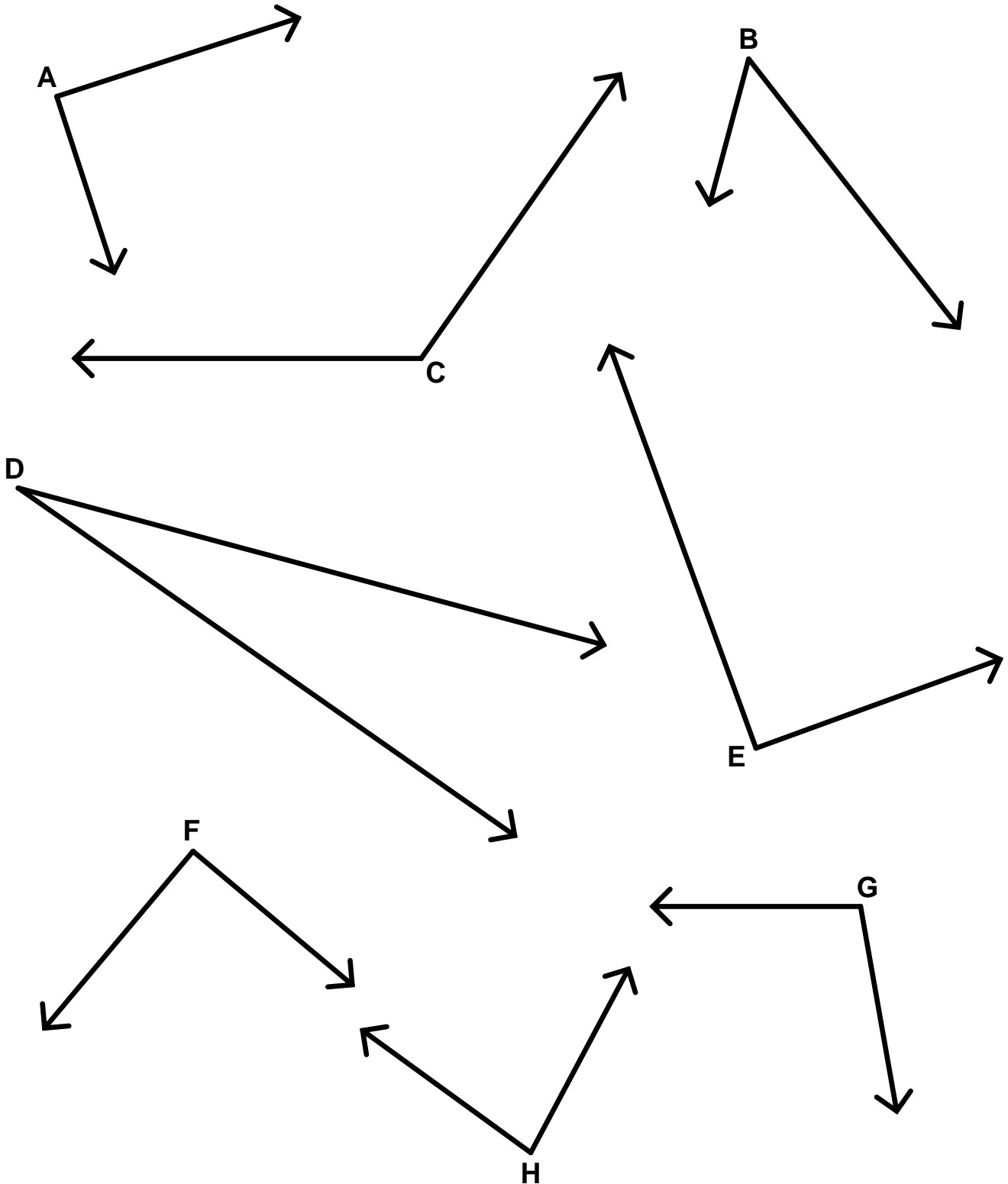
Line, Line Segment, Ray, Angle, Vertex



Name \_\_\_\_\_

G1(b)

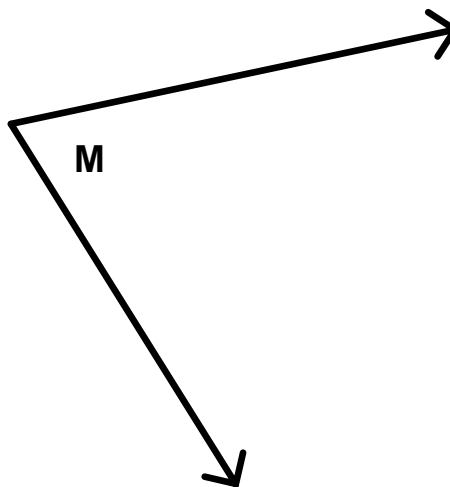
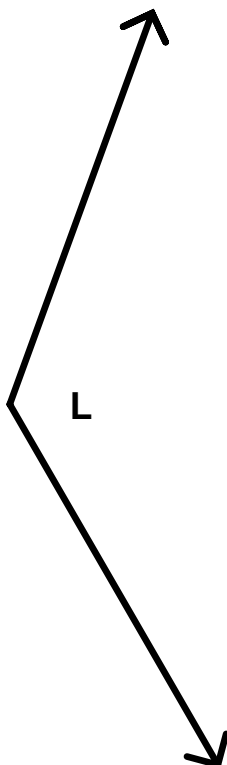
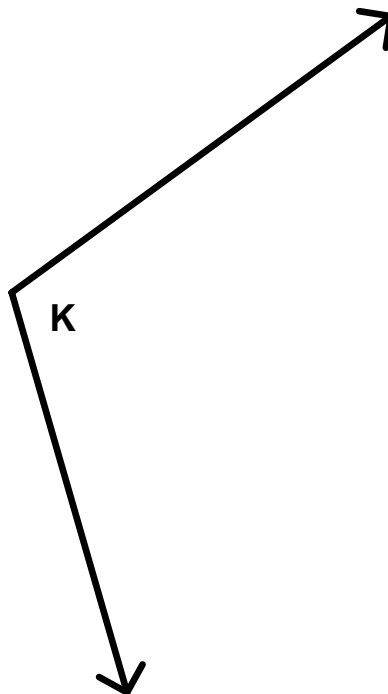
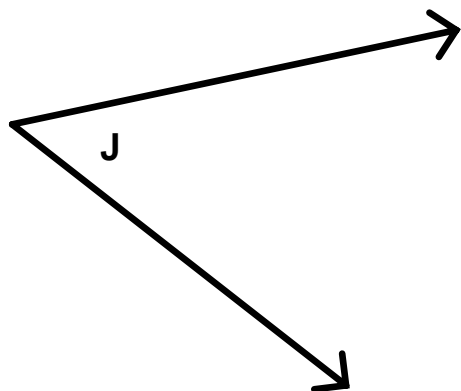
Which of these angles are right angles?



Name \_\_\_\_\_

G3

Draw as many different four-sided shapes as you can using these four angles. An angle congruent to each of **J**, **K**, **L**, and **M**, must be part of each shape. Label the angles of your shapes.

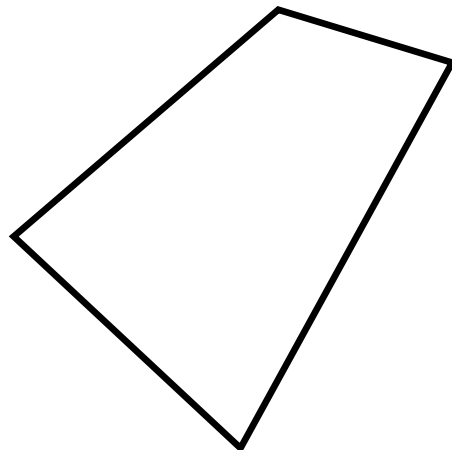
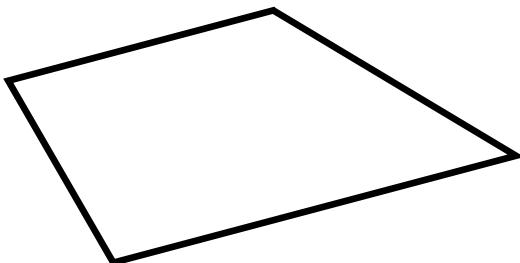
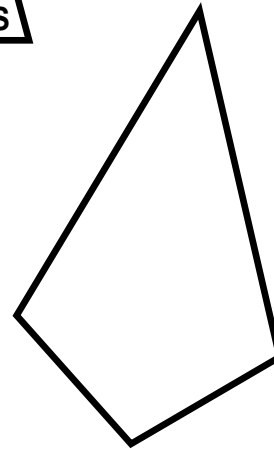
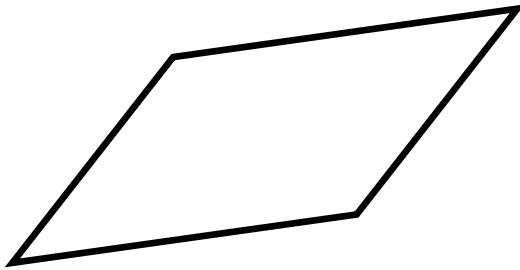


Name \_\_\_\_\_

G6

For each quadrilateral, check all pairs of angles and indicate the supplementary pairs. One is done for you.

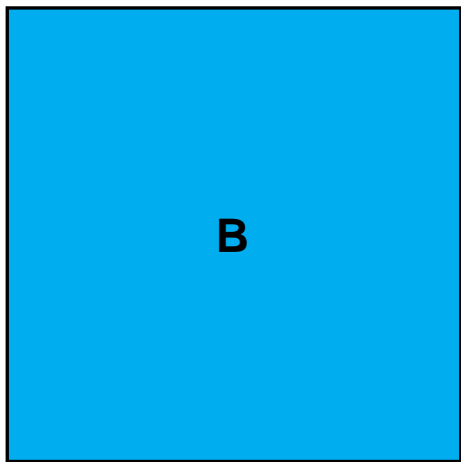
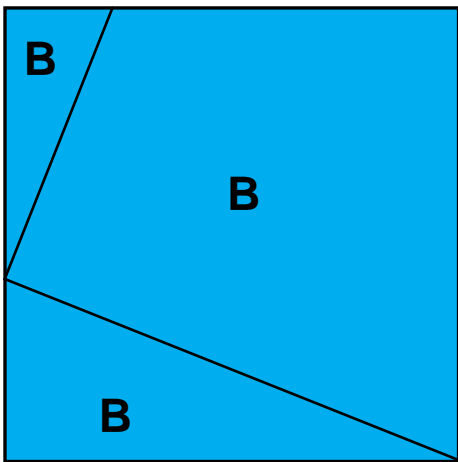
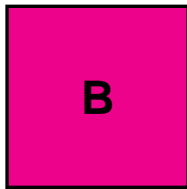
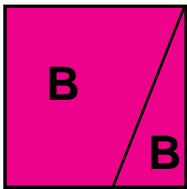
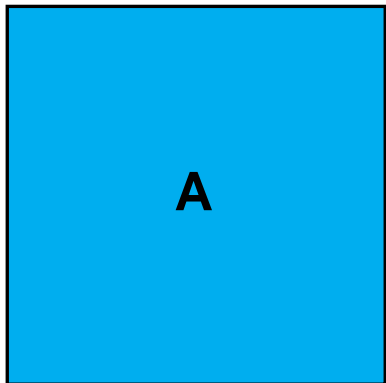
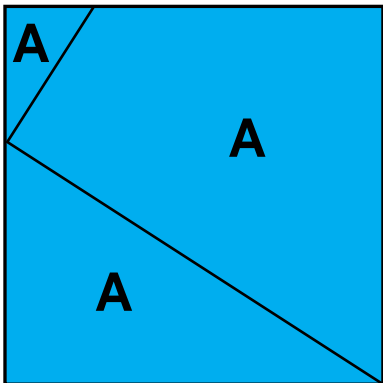
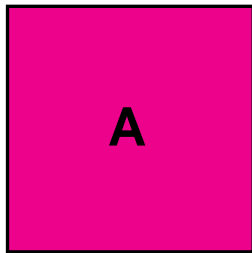
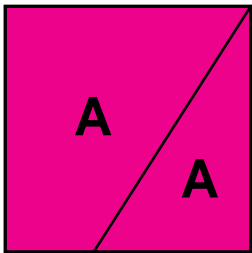
**S** and **T** are supplementary





Name \_\_\_\_\_

G10(a)



Name \_\_\_\_\_

G10(b)

1

4

9

16

36

25

13

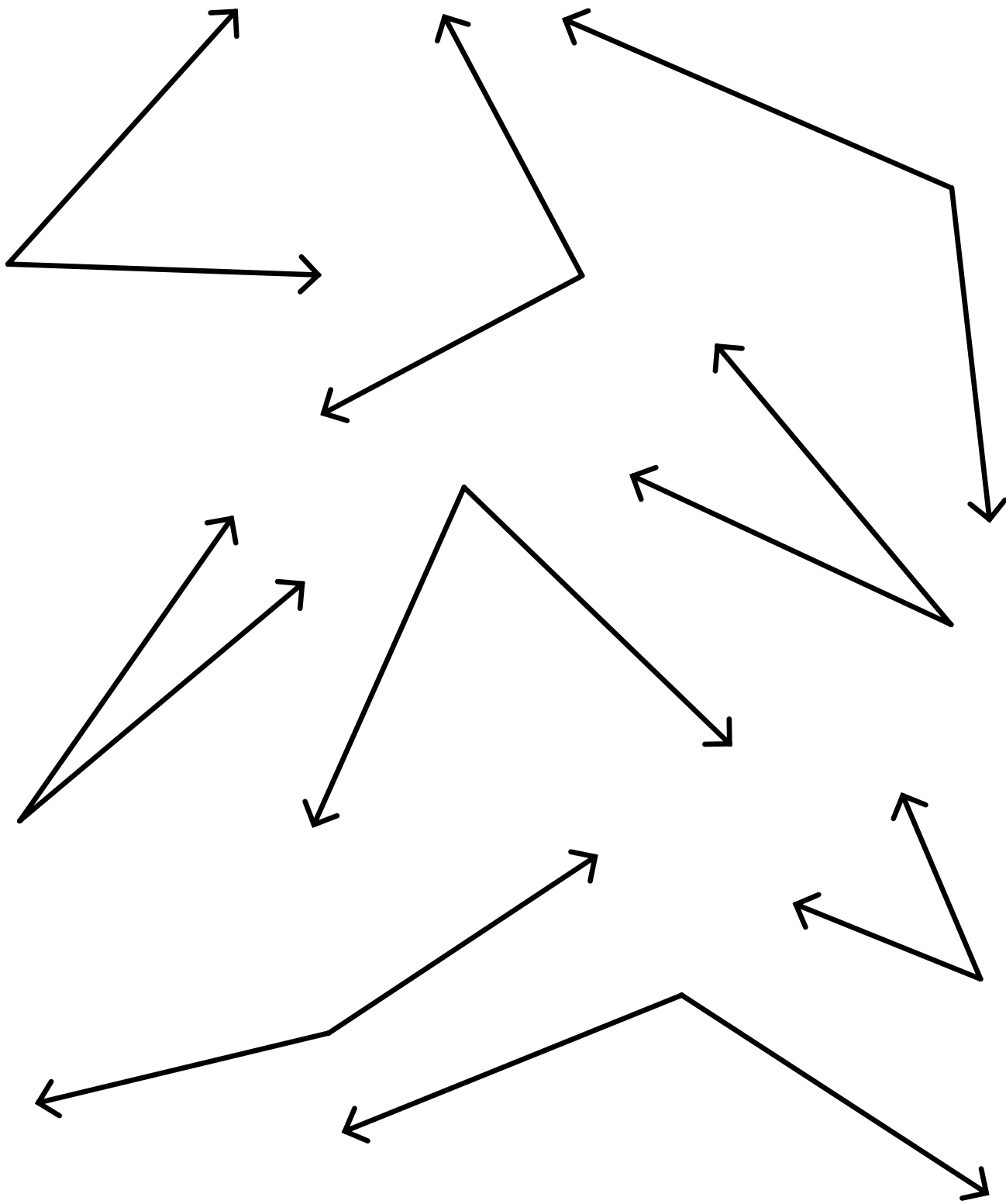
45

49

Name \_\_\_\_\_

G11(a)

Use a protractor to measure these angles.



Name \_\_\_\_\_

G11(b)

Use a straightedge and a protractor to construct angles with the given measures.

$30^\circ$

$45^\circ$

$85^\circ$

$115^\circ$

$60^\circ$

$167^\circ$

$22^\circ$

$90^\circ$

$75^\circ$

Name \_\_\_\_\_

G13(a)

**A** \_\_\_\_\_  
\_\_\_\_\_

**B** \_\_\_\_\_  
\_\_\_\_\_

**C** \_\_\_\_\_  
\_\_\_\_\_

**D** \_\_\_\_\_  
\_\_\_\_\_

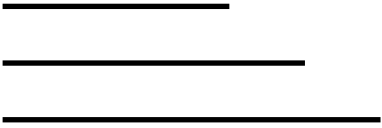
**E** \_\_\_\_\_  
\_\_\_\_\_

Use each pair of segments to draw as many triangles as you can. In a triangle, use each segment of the pair at least once. Mark each triangle with the letter of the pair of segments used to construct it.

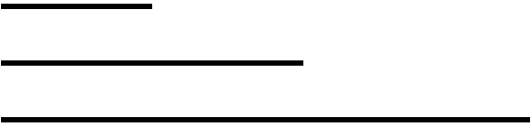
Name \_\_\_\_\_

G13(b)

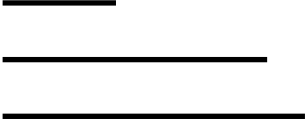
**A**



**B**



**C**



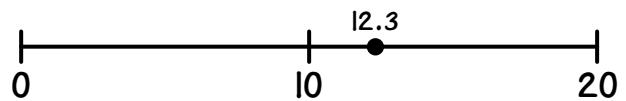
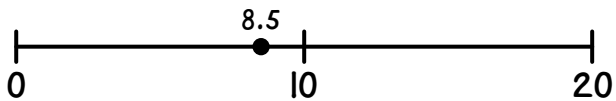
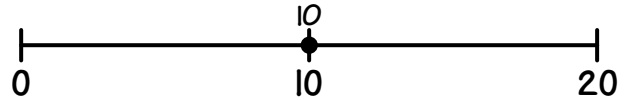
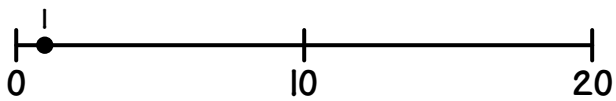
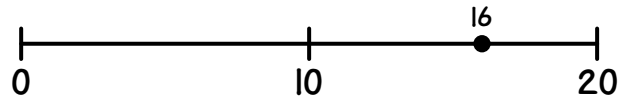
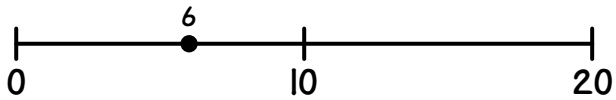
**D**



Use each set of segments to draw as many triangles as you can. Each segment must be used in a triangle. Mark each triangle with the letter of the set of segments used to construct it.

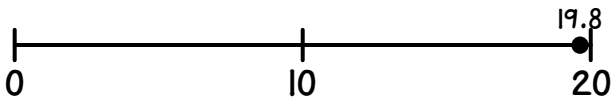
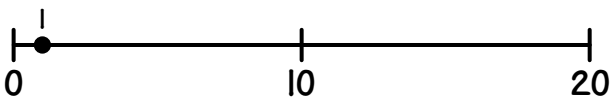
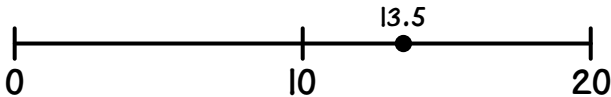
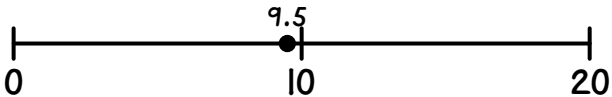
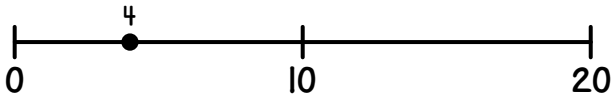
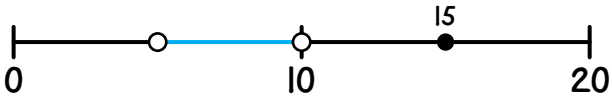
Name \_\_\_\_\_

In each picture, one breaking point is given. Find, if possible, a second breaking point that gives a triangle.



Name \_\_\_\_\_

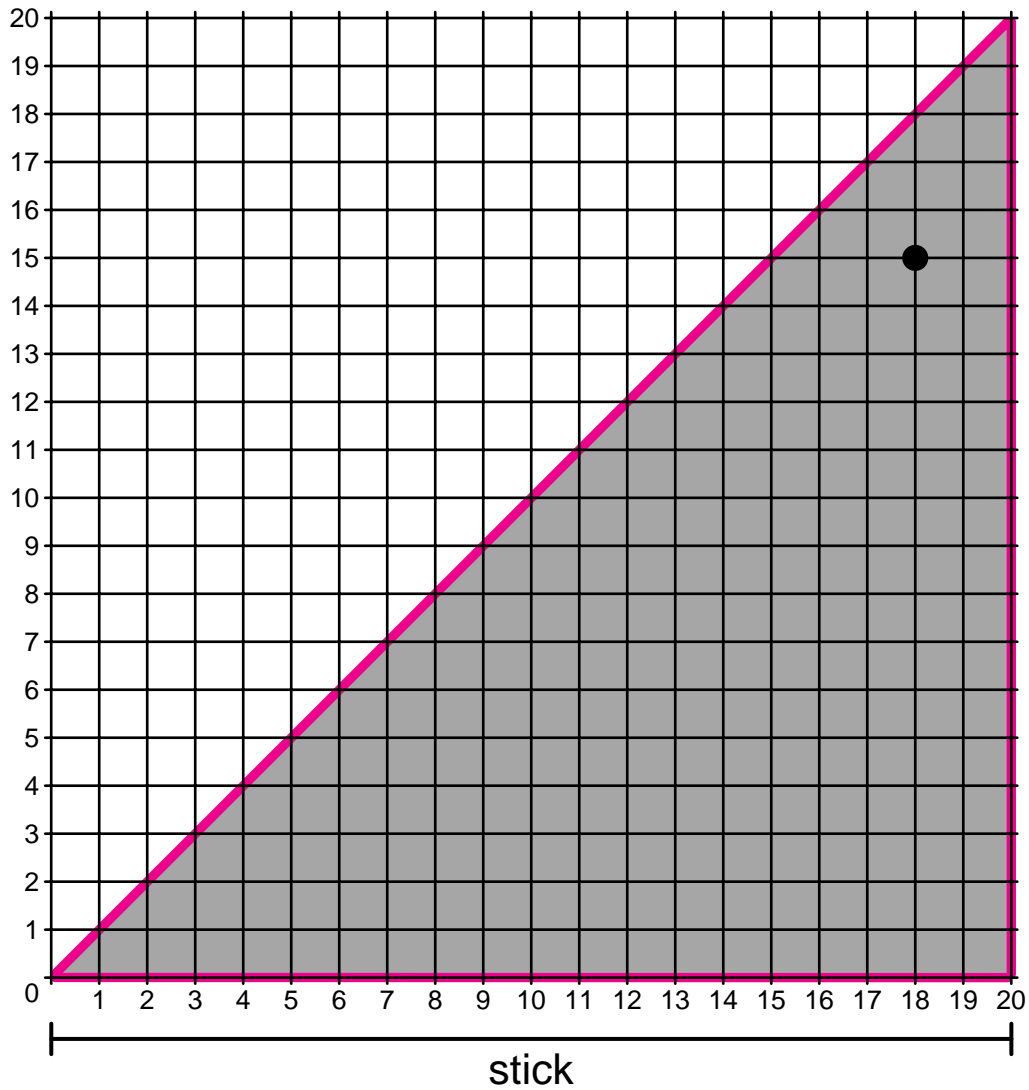
In each picture, one breaking point is given. Color blue all possible second points that give a triangle. An example is done for you.





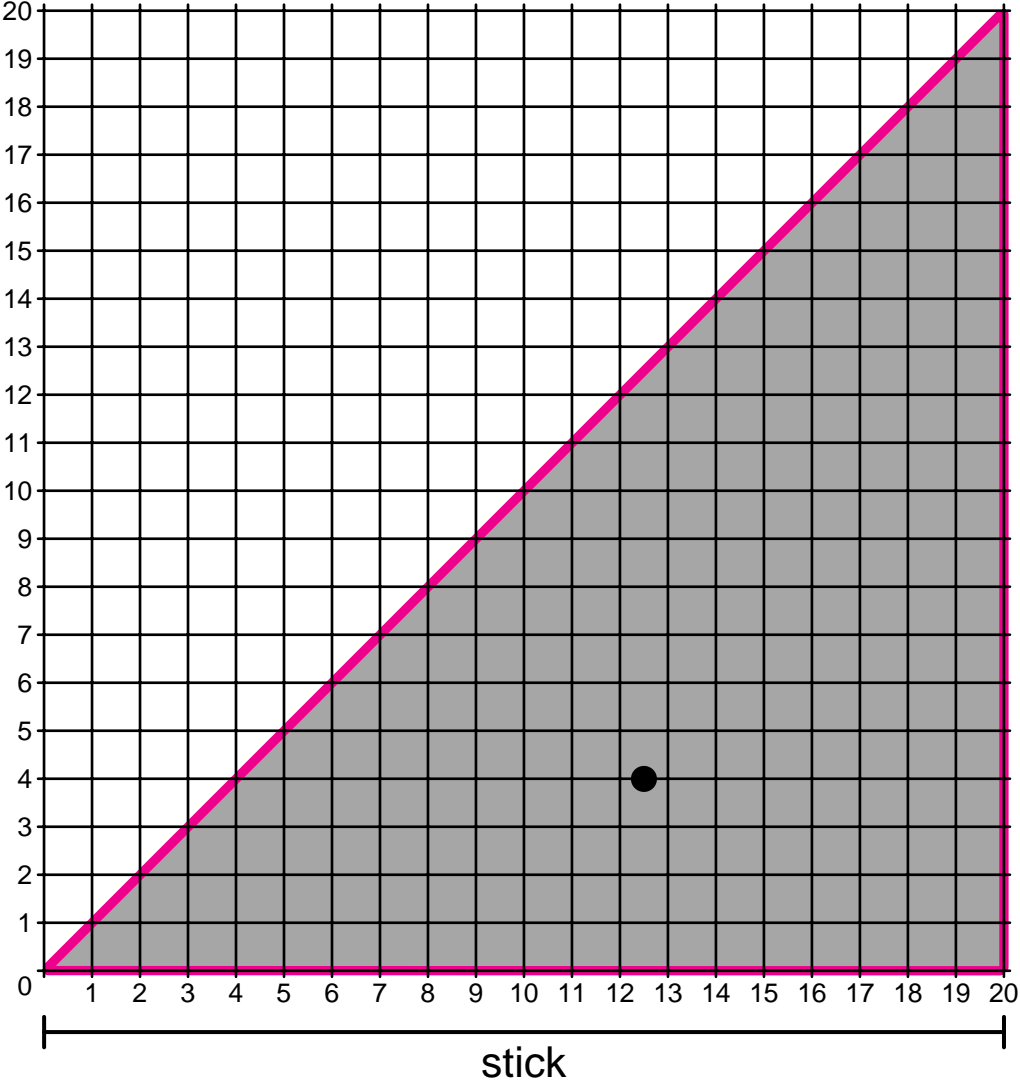
Name \_\_\_\_\_

Find the breaking points on the stick that correspond to the point in the honey triangle that is marked with a dot.



Will the three resulting pieces form a triangle? \_\_\_\_\_

Find the breaking points on the stick that correspond to the point in the honey triangle marked with a dot.

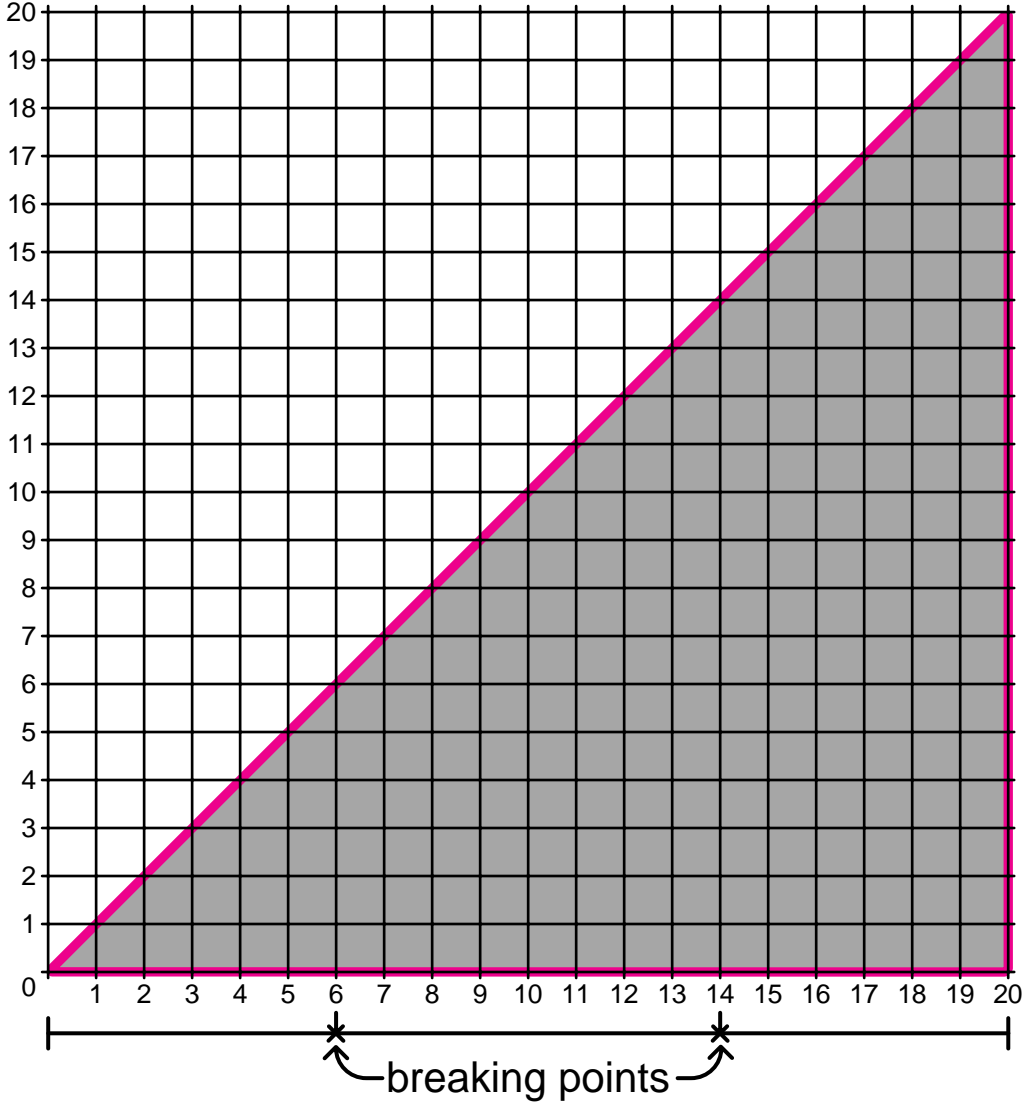


Will the three resulting pieces form a triangle? \_\_\_\_\_

Name \_\_\_\_\_

G15      \*\*

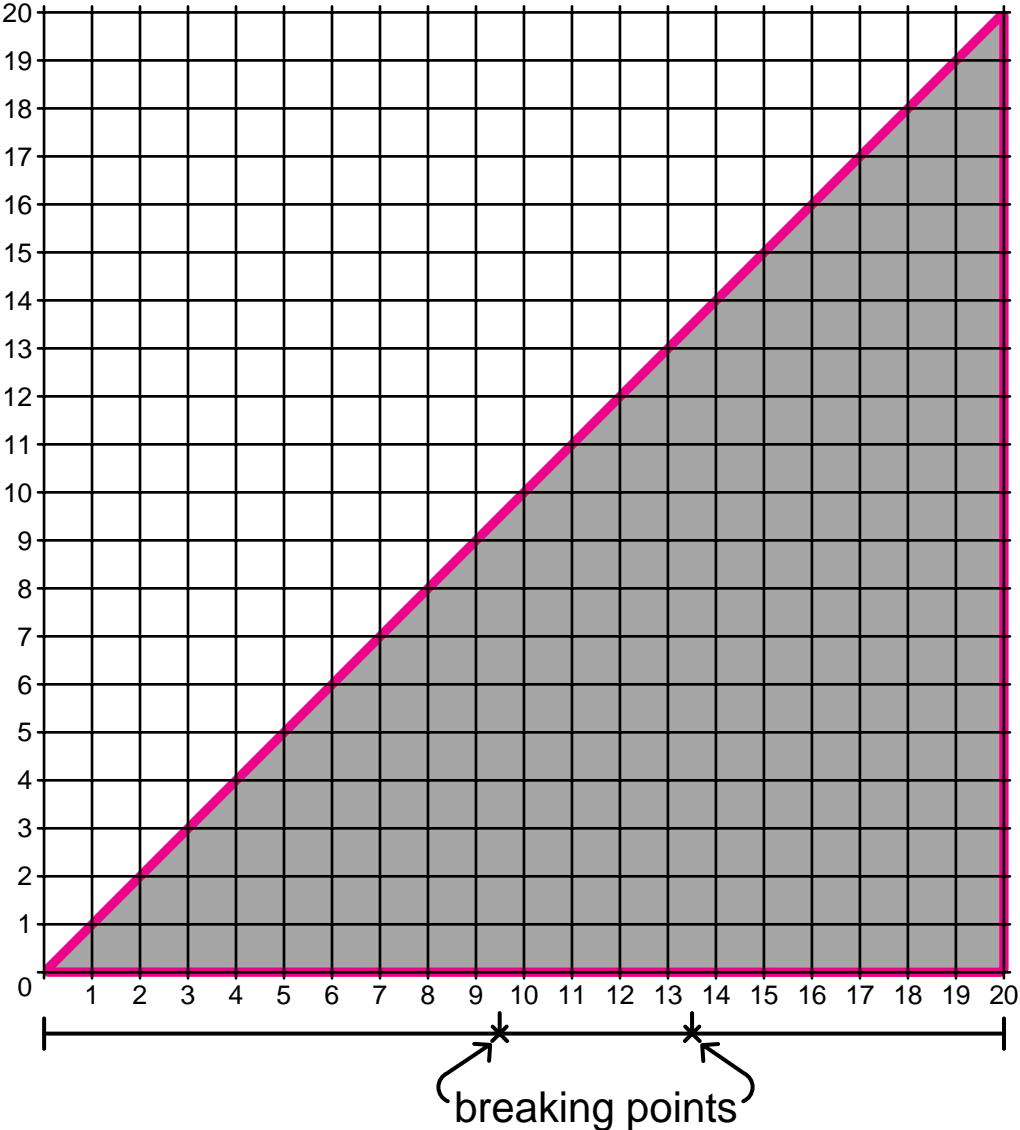
Find the point in the honey triangle that corresponds to the breaking points on the stick that are indicated.



Will the three resulting pieces form a triangle? \_\_\_\_\_

(over)

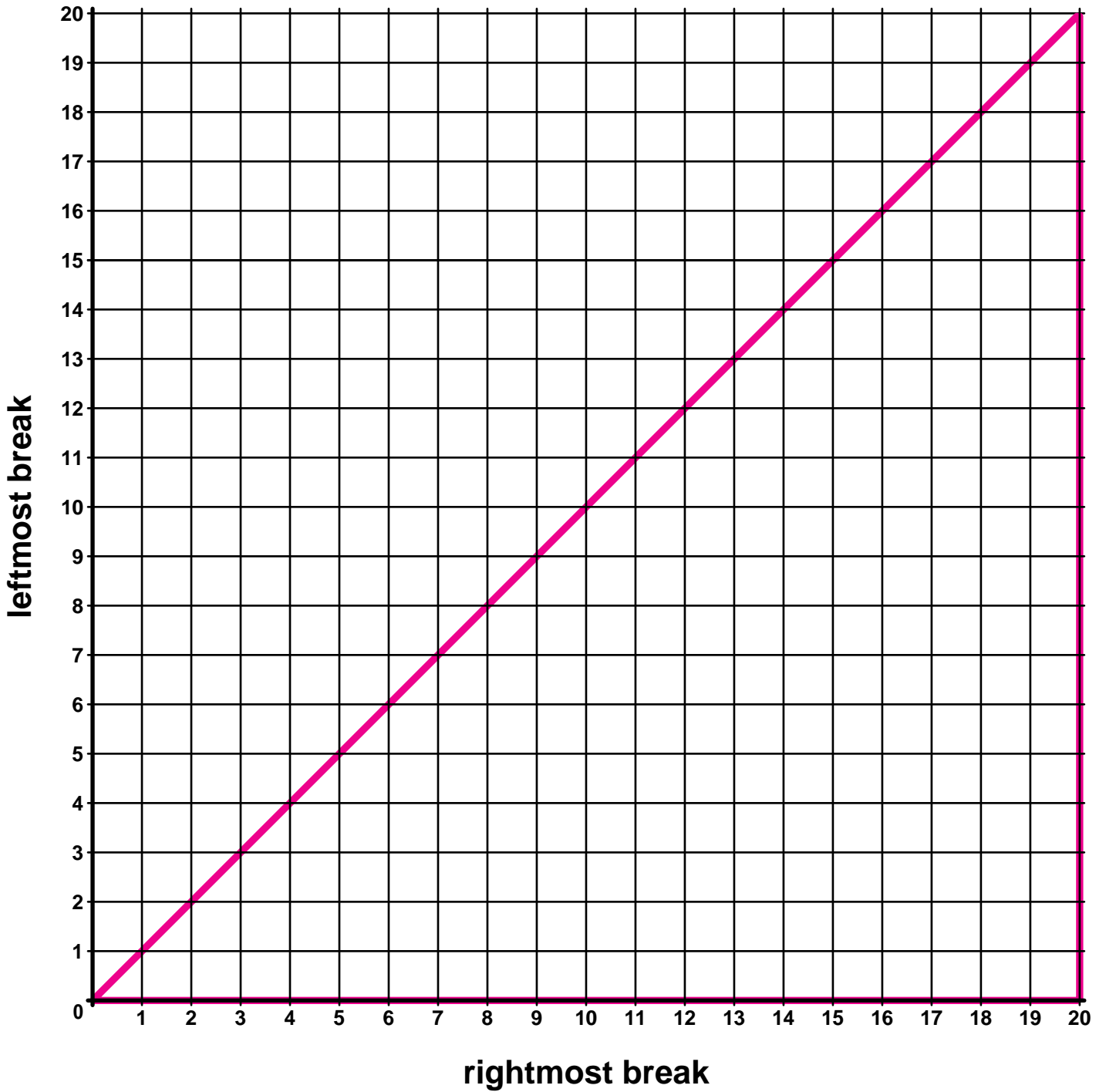
Find the point in the honey triangle that corresponds to the breaking points on the stick that are indicated.



Will the three resulting pieces form a triangle? \_\_\_\_\_

Name \_\_\_\_\_

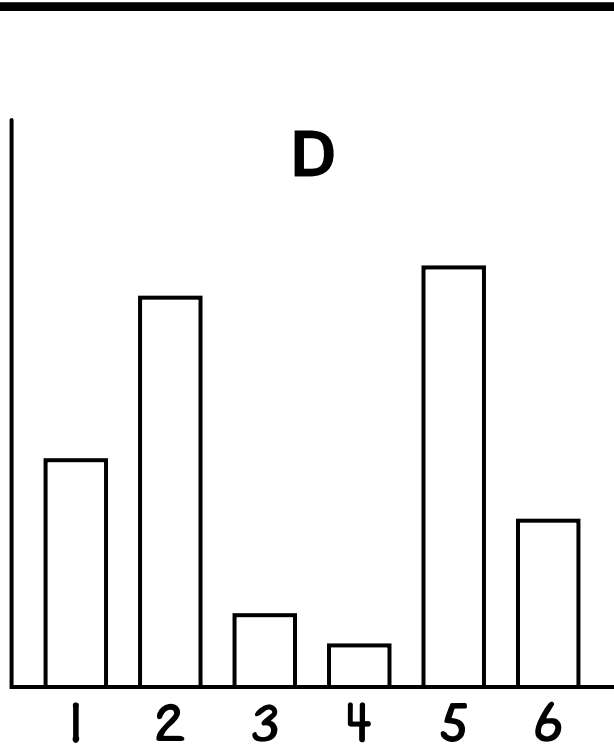
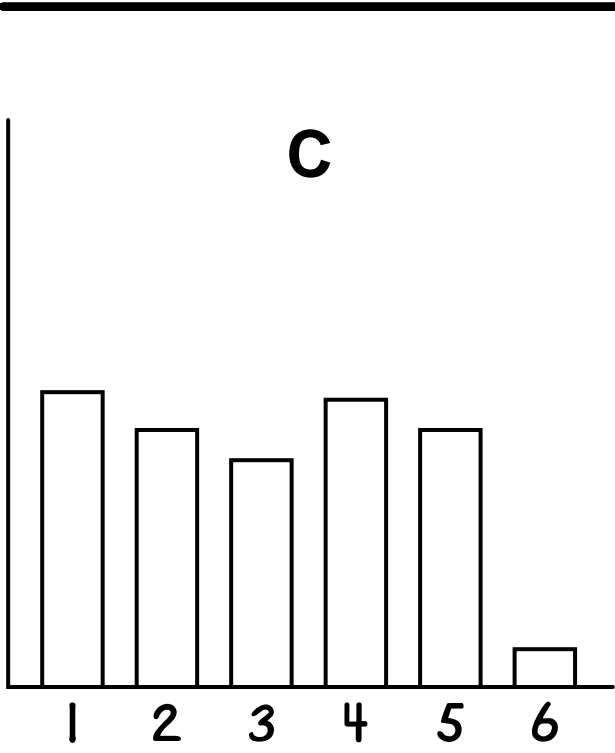
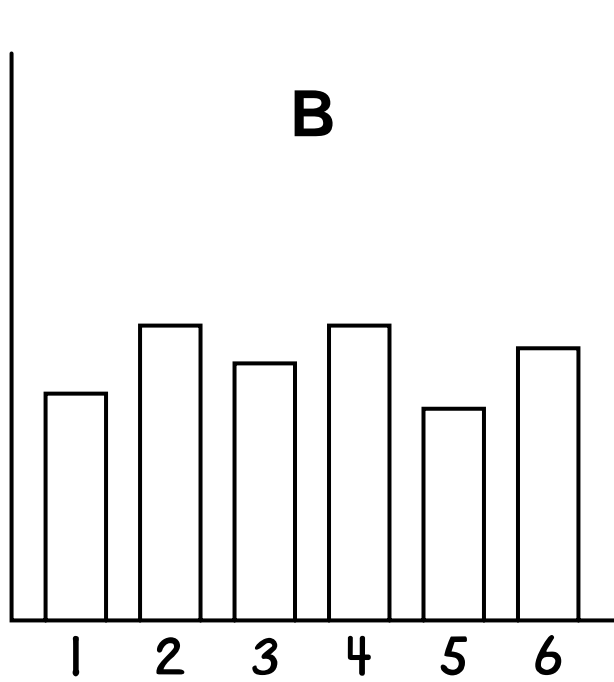
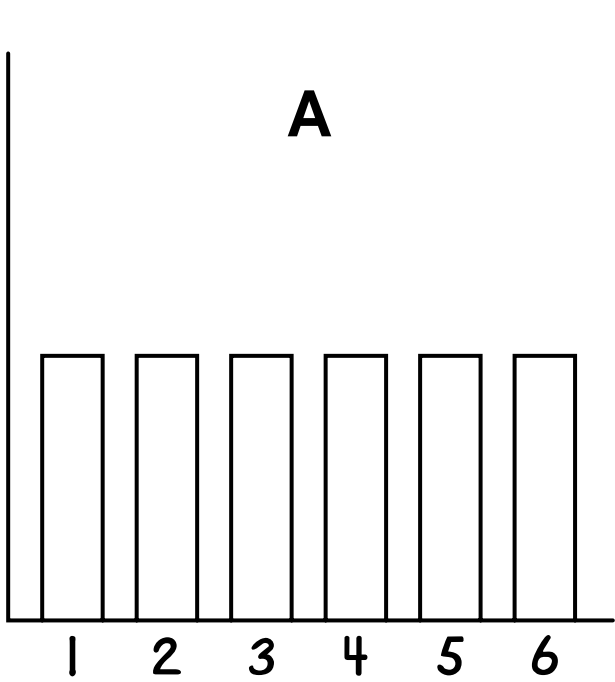
G16



Name \_\_\_\_\_

P1(a)

### Rolling a Die



Name \_\_\_\_\_

P1(b)

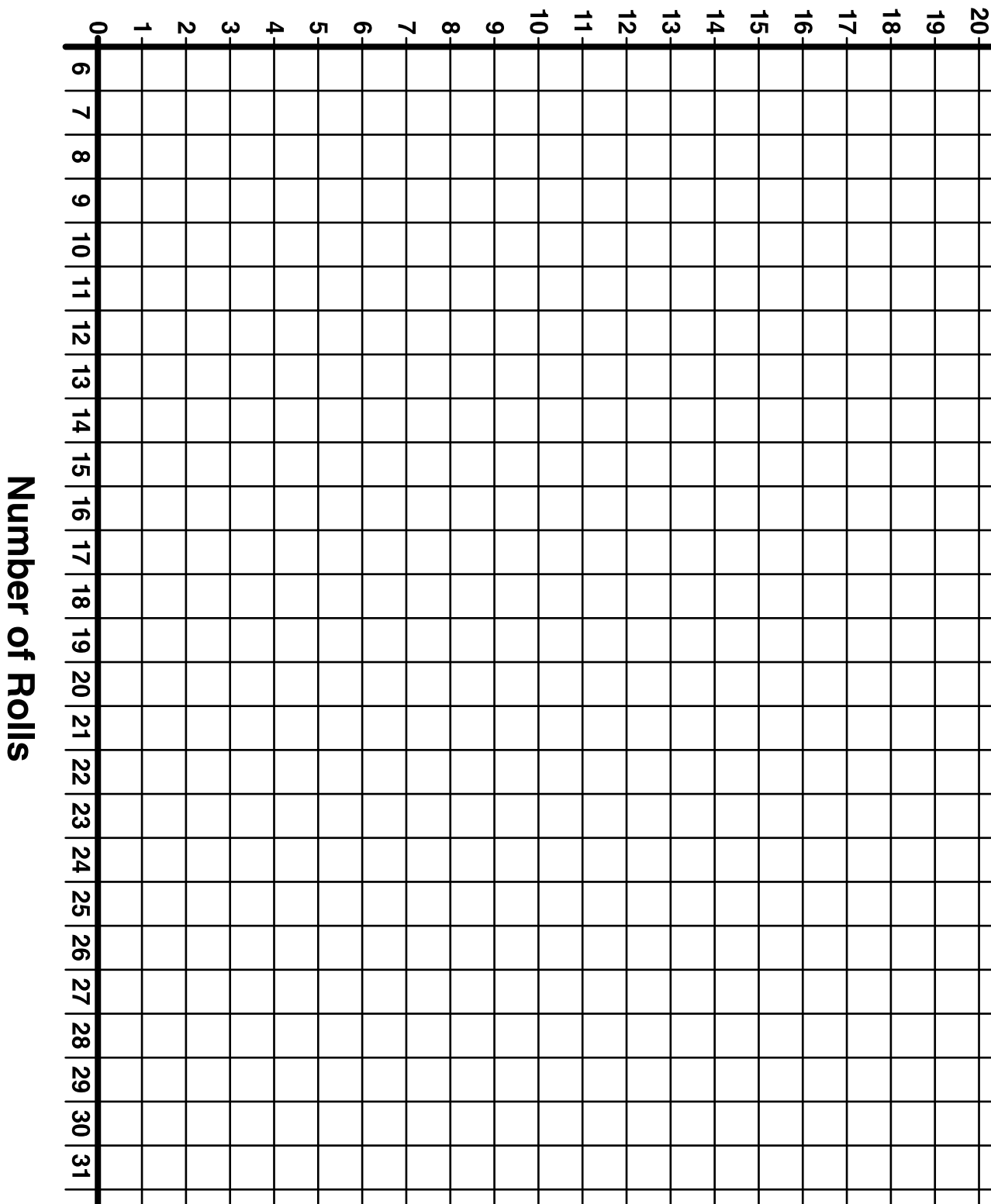
Record in this table the results of each simulation with the die.

	Number on Die						Number of Rolls
	1	2	3	4	5	6	
1st Trial							
2nd Trial							
3rd Trial							
4th Trial							
5th Trial							
6th Trial							
T o t a l							

Name \_\_\_\_\_

P1(c)

Draw a bar graph of the class data; how many trials of each length (number of rolls).

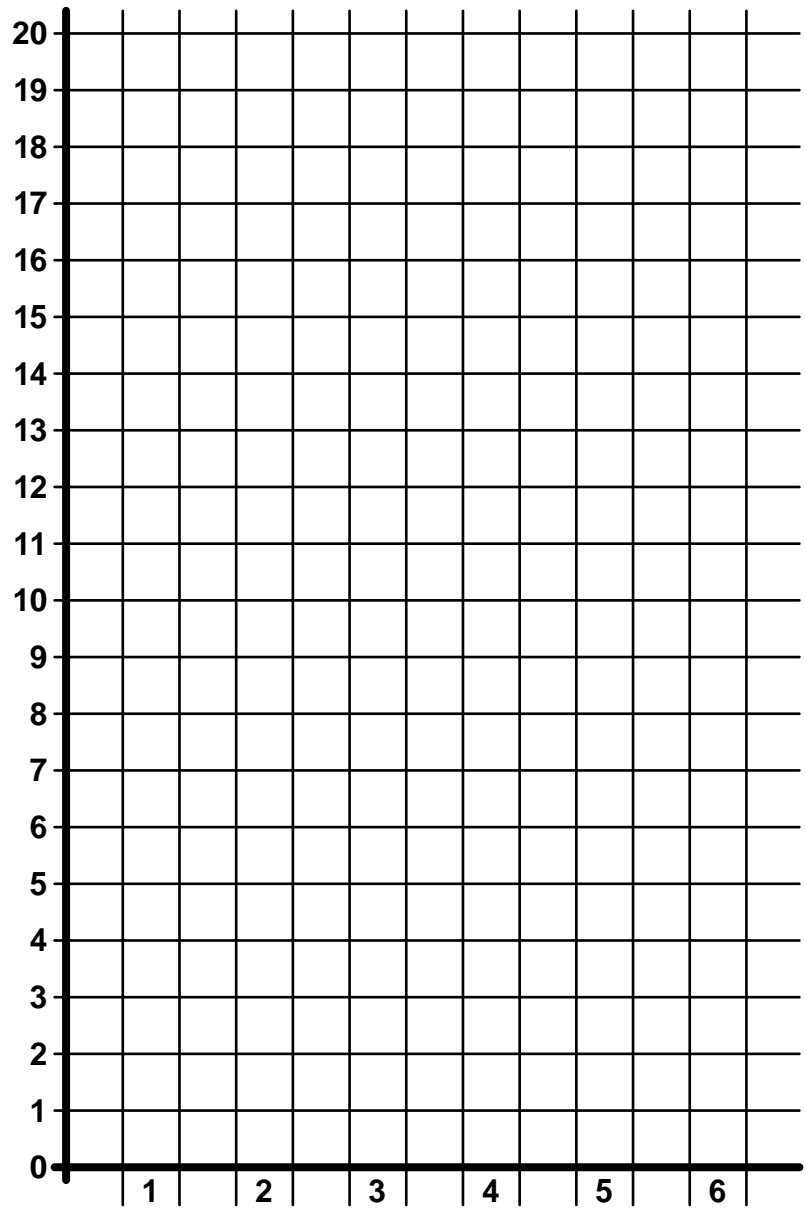




Name \_\_\_\_\_

P1(d)

Draw a bar graph of the number of times each number on the die occurred during your simulations.



**Number on Die**

Name \_\_\_\_\_

P2(a)

### Archery Game 1

Names: **A** \_\_\_\_\_ **B** \_\_\_\_\_

Archer **A** hits the target if **A** rolls 4 or 5 or 6.

Archer **B** hits the target if **B** rolls 4 or 5 or 6.

Archer **A** goes first in every game.

The first person to hit the target wins.

Simulate this archery game ten times. Record the winner of each game.

Game	Winner (A or B)
1	
2	
3	
4	
5	

Game	Winner (A or B)
6	
7	
8	
9	
10	

How many games did **A** win? \_\_\_\_\_

How many games did **B** win? \_\_\_\_\_

What fraction of the games did **A** win? \_\_\_\_\_

Name \_\_\_\_\_

P2(b)

### Archery Game 2

Archer **A** hits the target one-third of the time:  $p(\mathbf{A} \text{ hits}) = \frac{1}{3}$  .

Archer **B** hits the target one-half of the time:  $p(\mathbf{B} \text{ hits}) = \frac{1}{2}$  .

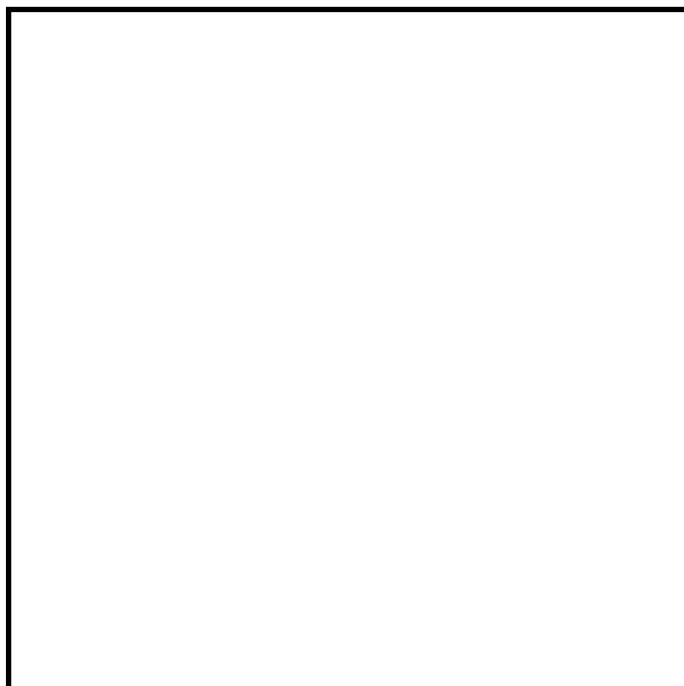
Archer **A** always shoots first.

The first person to hit the target wins.

Use this square to determine each player's probability of winning.

● **A**

● **B**



Complete.

$p(\mathbf{A} \text{ wins}) =$  \_\_\_\_\_

$p(\mathbf{B} \text{ wins}) =$  \_\_\_\_\_

Who is favored in this archery game, or is it a fair game? \_\_\_\_\_

Why?

Name \_\_\_\_\_

P2(c)

### Archery Game 2

Names: **A** \_\_\_\_\_ **B** \_\_\_\_\_

Archer **A** hits the target if **A** rolls 5 or 6.

Archer **B** hits the target if **B** rolls 4 or 5 or 6.

Archer **A** goes first in every game.

The first person to hit the target wins.

Simulate this archery game ten times. Record the winner of each game.

Game	Winner (A or B)
1	
2	
3	
4	
5	

Game	Winner (A or B)
6	
7	
8	
9	
10	

How many games did **A** win? \_\_\_\_\_

How many games did **B** win? \_\_\_\_\_

What fraction of the games did **A** win? \_\_\_\_\_

Name \_\_\_\_\_

P2 \*

Archer **C** hits the target one-fourth of the time:  $p(\mathbf{C} \text{ hits}) = \frac{1}{4}$ .

Archer **D** hits the target one-third of the time:  $p(\mathbf{D} \text{ hits}) = \frac{1}{3}$ .

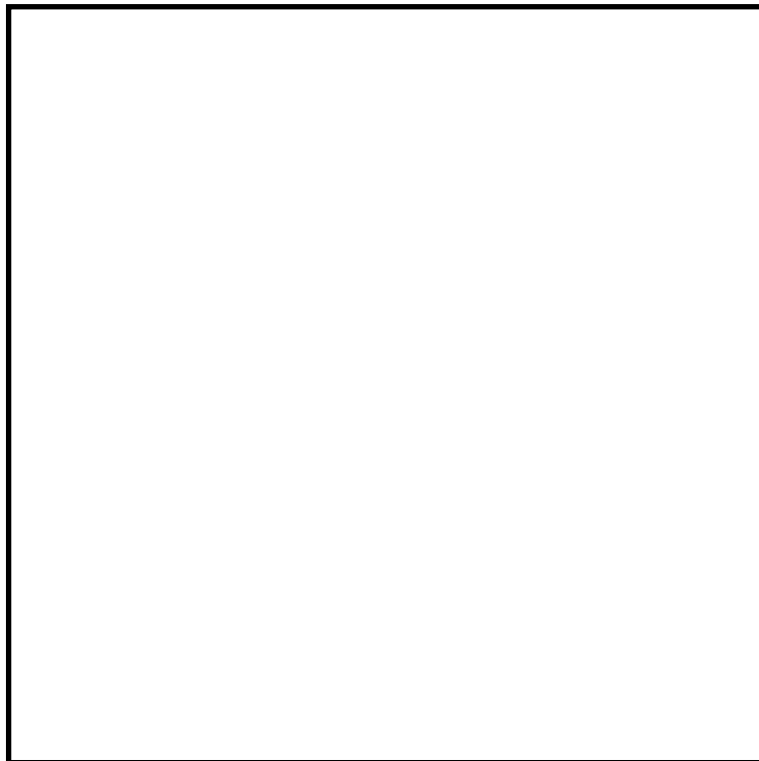
Archer **C** always shoots first.

The first person to hit the target wins.

Use this square to determine each player's probability of winning this archery game.

● **C**

● **D**



$p(\mathbf{C} \text{ wins}) =$  \_\_\_\_\_

$p(\mathbf{D} \text{ wins}) =$  \_\_\_\_\_

Name \_\_\_\_\_

P2                      \*\*

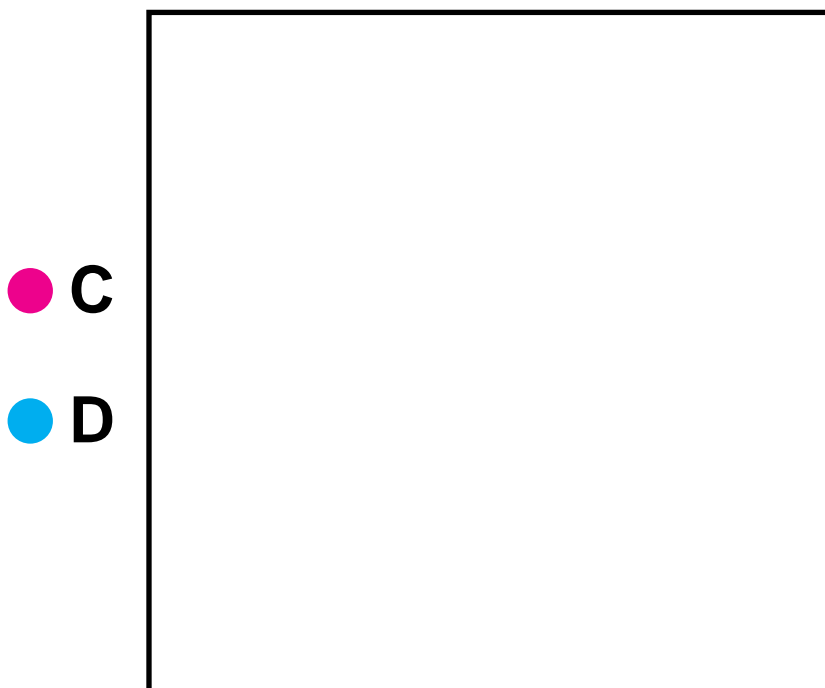
Archer **C** hits the target one-half of the time:  $p(\mathbf{C} \text{ hits}) = \frac{1}{2}$ .

Archer **D** hits the target two-thirds of the time:  $p(\mathbf{D} \text{ hits}) = \frac{2}{3}$ .

Archer **C** always shoots first.

The first person to hit the target wins.

Use this square to determine each player's probability of winning this archery game.



$p(\mathbf{C} \text{ wins}) =$  \_\_\_\_\_

$p(\mathbf{D} \text{ wins}) =$  \_\_\_\_\_

Name \_\_\_\_\_

P3(a)

Each person tosses the dime ten times and tosses the quarter ten times. Count and record the number of wins. For a win the coin must land completely inside a square of the grid.

Name	Coin	Number of tosses	Number of wins
1.	Dime	10	
2.	Dime	10	
1.	Quarter	10	
2.	Quarter	10	

Of the 20 (total) tosses of the dime, how many were wins? \_\_\_\_\_

Of the 20 (total) tosses of the quarter, how many were wins? \_\_\_\_\_

Name \_\_\_\_\_

P3(b)

### Dime

Side of interior square: \_\_\_\_\_ cm

Side of grid square: \_\_\_\_\_ cm

Area of interior square: \_\_\_\_\_ cm<sup>2</sup>

Area of grid square: \_\_\_\_\_ cm<sup>2</sup>

Probability of winning =  $\frac{\text{_____}}{\text{(fraction)}} \approx \frac{\text{_____}}{\text{(decimal)}}$

---

### Quarter

Side of interior square: \_\_\_\_\_ cm

Side of grid square: \_\_\_\_\_ cm

Area of interior square: \_\_\_\_\_ cm<sup>2</sup>

Area of grid square: \_\_\_\_\_ cm<sup>2</sup>

Probability of winning =  $\frac{\text{_____}}{\text{(fraction)}} \approx \frac{\text{_____}}{\text{(decimal)}}$



Name \_\_\_\_\_

P4

\*

Complete.

$$33 \text{ (R) } 5 = \underline{\hspace{2cm}} \quad 16837 \text{ (R) } 10 = \underline{\hspace{2cm}}$$

$$33 \text{ (R) } 8 = \underline{\hspace{2cm}} \quad 16837 \text{ (R) } 100 = \underline{\hspace{2cm}}$$

$$82 \text{ (R) } 10 = \underline{\hspace{2cm}} \quad 16837 \text{ (R) } 1000 = \underline{\hspace{2cm}}$$

$$637 \text{ (R) } 10 = \underline{\hspace{2cm}} \quad 5.862 \text{ (R) } 1 = \underline{\hspace{2cm}}$$

$$73.27 \text{ (R) } 1 = \underline{\hspace{2cm}} \quad 5.862 \text{ (R) } 0.1 = \underline{\hspace{2cm}}$$

$$58.18 \text{ (R) } 0.1 = \underline{\hspace{2cm}} \quad 5.862 \text{ (R) } 0.01 = \underline{\hspace{2cm}}$$

Name \_\_\_\_\_

Fill in the boxes.

City	Population	Annual Population Growth Rate per 1000 People	Annual Net Gain
Hondo, Texas	5 000	9.8	<input type="text"/>
Harrisburg, Pennsylvania	79 697	-14.7	<input type="text"/>
Colo. Springs, Colorado	281,140	30.7	<input type="text"/>
Chicago, Illinois	2,783,726	-7.4	<input type="text"/>
Sunnyside, Oregon	6 208	<input type="text"/>	54
Bogulusa, Louisiana	21 823	<input type="text"/>	-301

A city with a population of 32 000 on January 1, 1994 has a population growth rate per 1 000 people of 13.6 in 1994 and 12.9 in 1995. What is that city's population on:

January 1, 1995? \_\_\_\_\_

January 1, 1996? \_\_\_\_\_

Name \_\_\_\_\_

P6

### U.S. Population by Age Group — 1990

Age	Percent of Total Population
0-4	7.5
5-9	7.3
10-14	6.9
15-19	7.1
20-24	7.7
25-29	8.6
30-34	8.8
35-39	8.0
40-44	7.1
45-49	5.5
50-54	4.5
55-59	4.2
60-64	4.3
65-69	4.1
70-74	3.2
75-79	2.4
80-84	1.6
>84	1.2

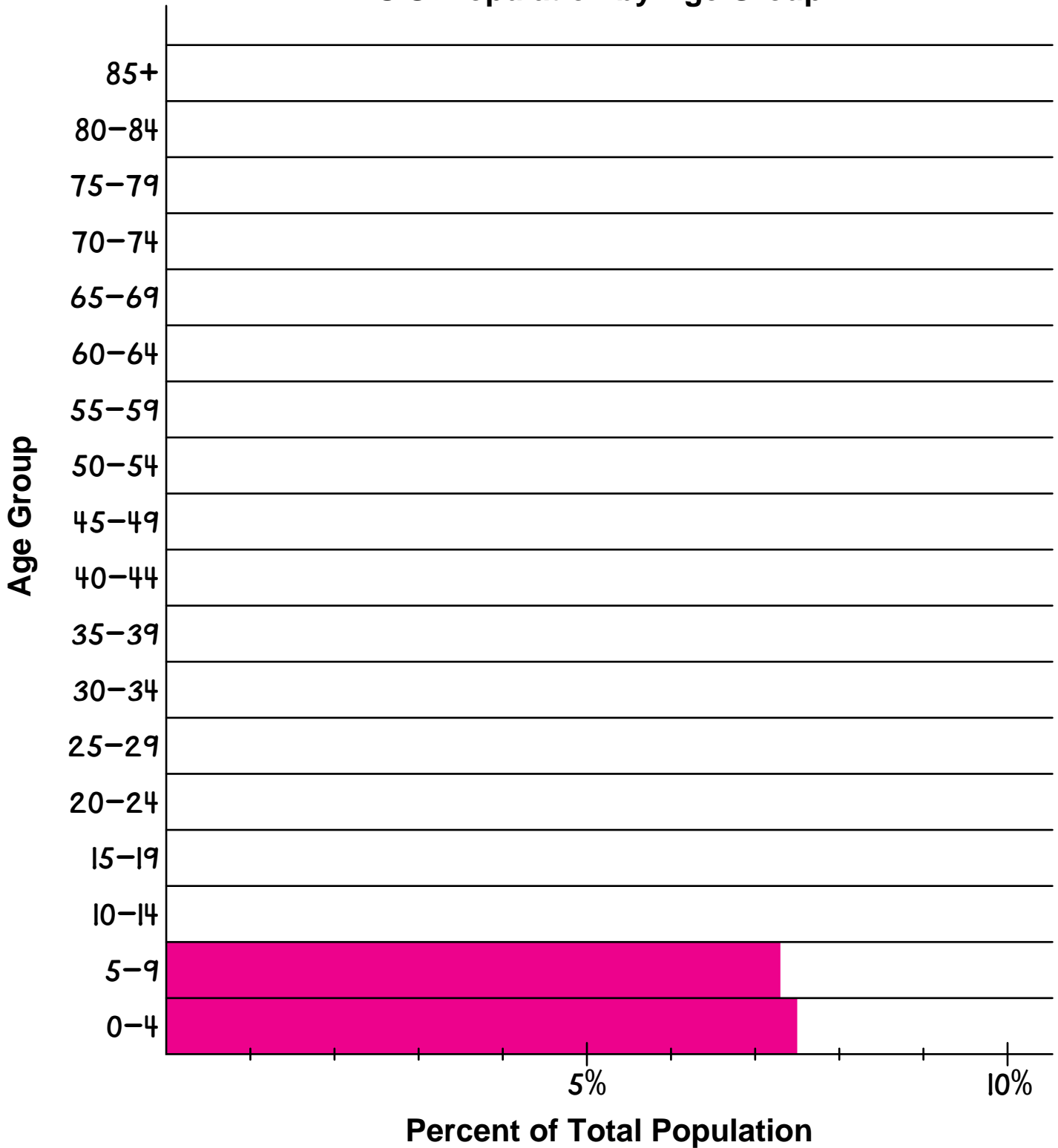
1990 U.S. Population: 248,718,000

Name \_\_\_\_\_

P6 \*

Complete the graph.

U.S. Population by Age Group



Name \_\_\_\_\_

P6

\*\*

1. What percent of Americans in 1990 were 15–19 years old? \_\_\_\_\_

How many Americans in 1990 were 15–19 years old? \_\_\_\_\_

2. What percent of Americans in 1990 were 65 years or older? \_\_\_\_\_

How many Americans in 1990 were 65 years old or older? \_\_\_\_\_

What percent of Americans were less than 65 years old in 1990? \_\_\_\_\_

3. Many Americans still remember World War II. What percent of the Americans in 1990 were born before 1940 (near the beginning of World War II)? \_\_\_\_\_

(Hint: Think about their ages.)

4. What percent of Americans were 5–19 years old in 1990? \_\_\_\_\_

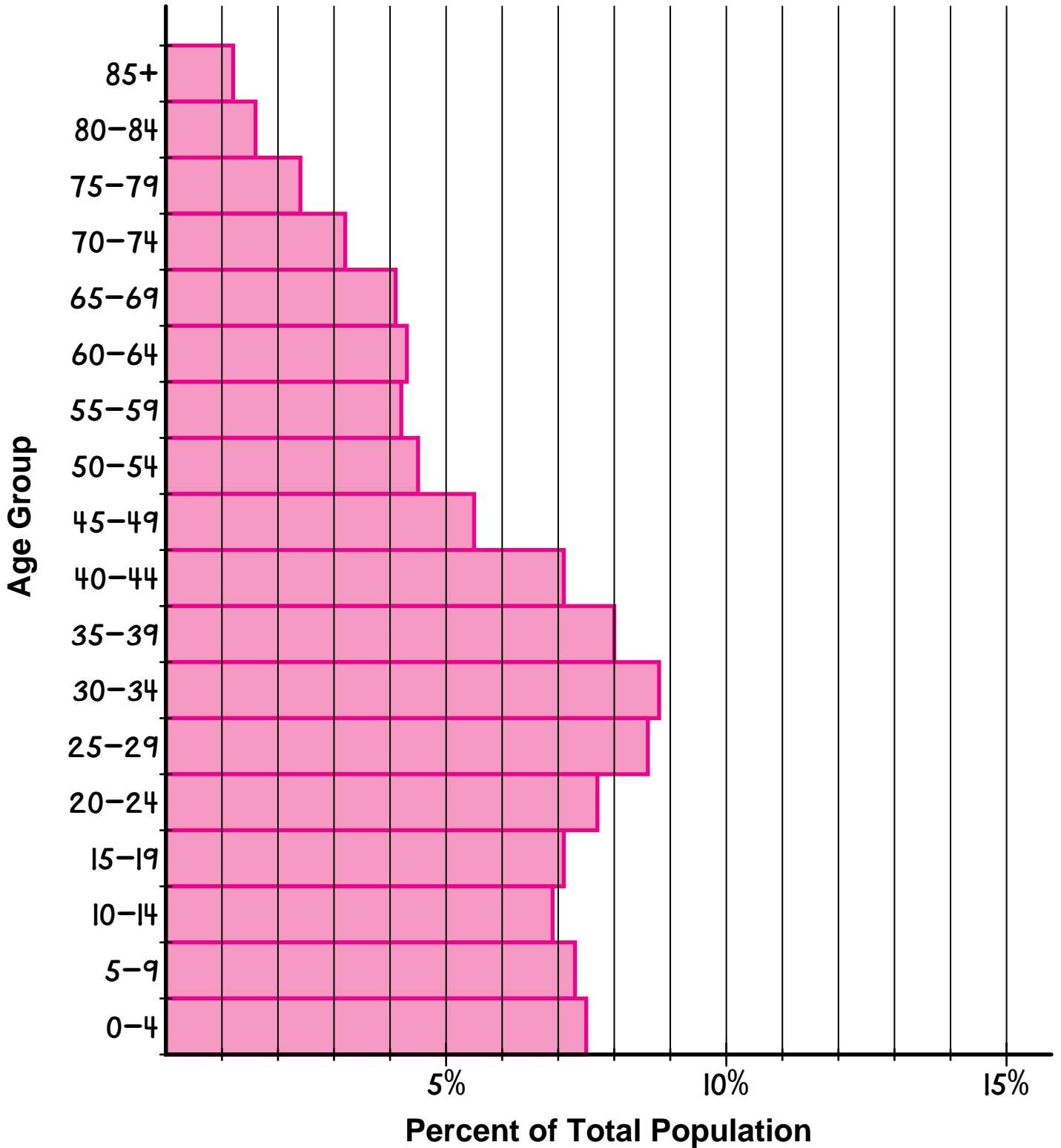
How many Americans were 5–19 years old in 1990? \_\_\_\_\_

In 1990, 88% of Americans 5–19 years old were in elementary or secondary schools. How many students is that? \_\_\_\_\_

Name \_\_\_\_\_

P7(a)

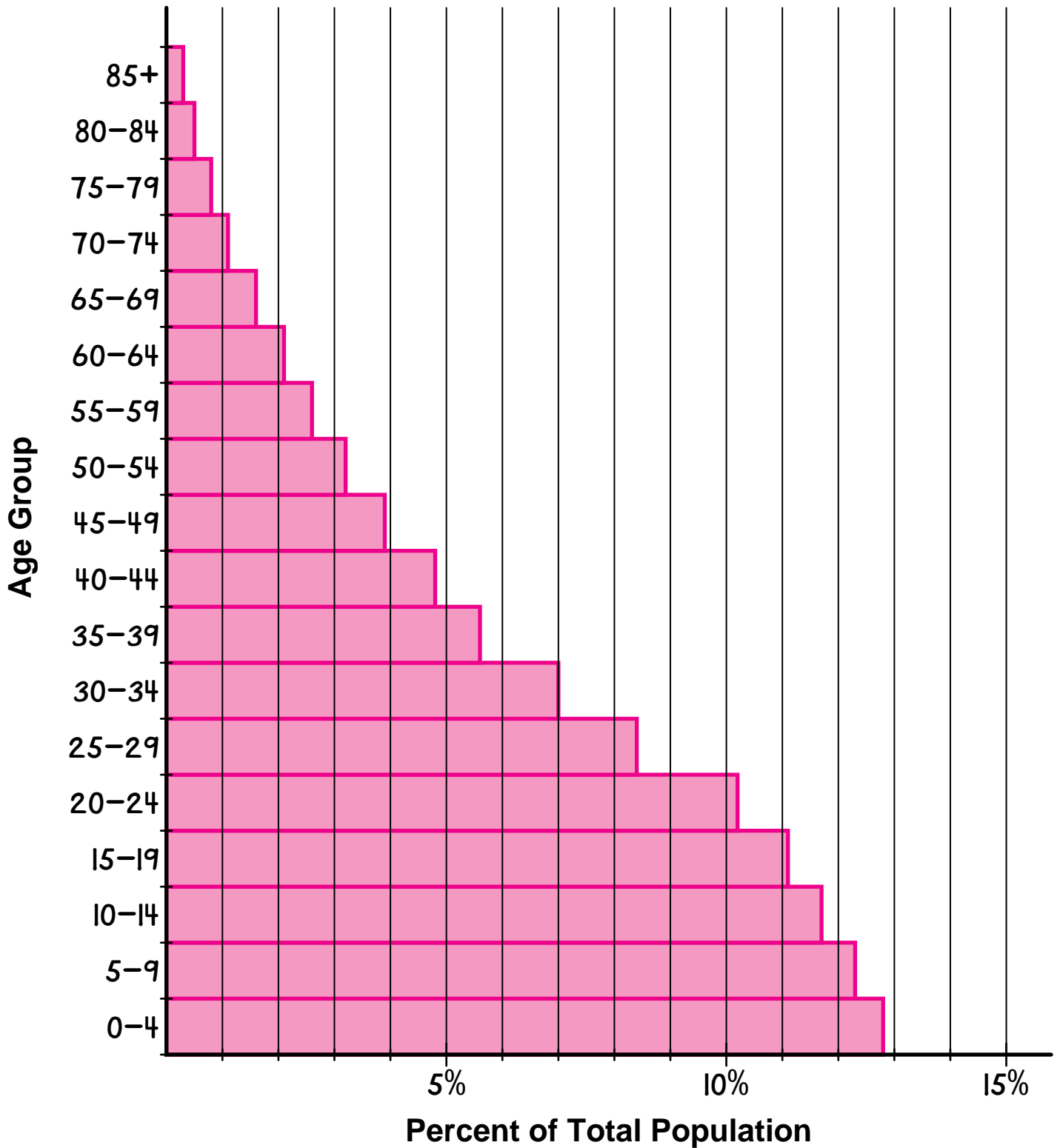
**Population Pyramid for the United States — 1990**  
**Total Population: 248,718,000**



Name \_\_\_\_\_

P7(b)

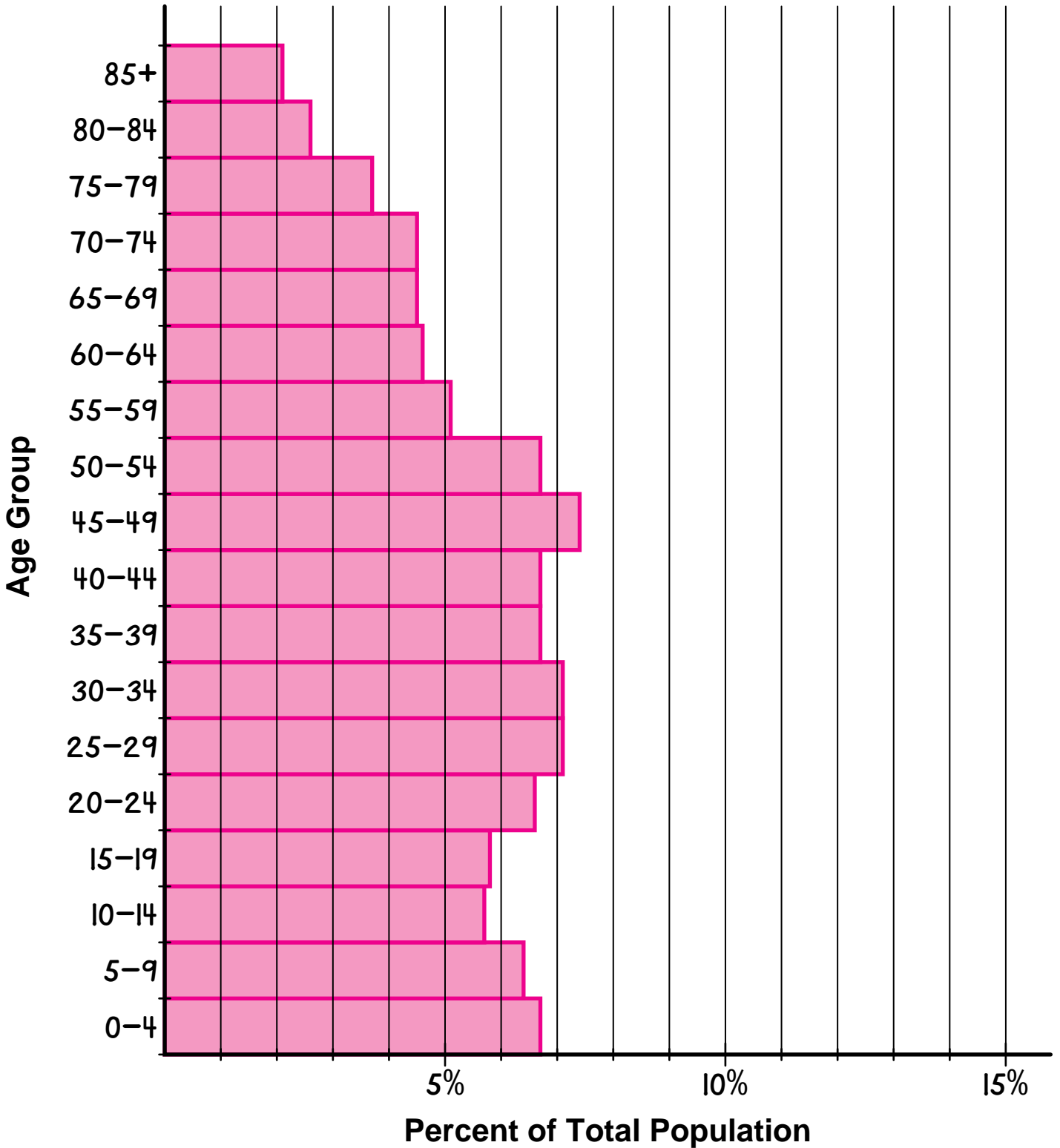
**Population Pyramid for Mexico — 1990**  
**Total Population: 85,121,000**



Name \_\_\_\_\_

P7(c)

**Population Pyramid for Sweden — 1990**  
**Total Population: 8,559,000**





Name \_\_\_\_\_

1. What percent of Americans are less than 20 years old? \_\_\_\_\_  
What percent of Mexicans are less than 20 years old? \_\_\_\_\_  
What percent of Swedes are less than 20 years old? \_\_\_\_\_

Use this information to explain at least one problem that Mexico may face that Sweden and the United States probably will not face.

\_\_\_\_\_

\_\_\_\_\_

How many Americans are less than 20 years old? \_\_\_\_\_  
How many Mexicans are less than 20 years old? \_\_\_\_\_  
How many Swedes are less than 20 years old? \_\_\_\_\_

2. What percent of Americans are 65 years old or older? \_\_\_\_\_  
What percent of Mexicans are 65 years old or older? \_\_\_\_\_  
What percent of Swedes are 65 years old or older? \_\_\_\_\_

Use this information to describe at least one possible difference between life in Mexico and life in Sweden and in the United States.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How many Americans are 65 years old or older? \_\_\_\_\_  
How many Mexicans are 65 years old or older? \_\_\_\_\_  
How many Swedes are 65 years old or older? \_\_\_\_\_

Name \_\_\_\_\_

P7

\*\*

1. The median age of a population is the age that  $\frac{1}{2}$  or 50% of the people are younger than. In class you found that the median age in the United States is about 32 years. Calculate the median age for:

Sweden \_\_\_\_\_

Mexico \_\_\_\_\_

2. About 3.4% of all Americans live in New York City. What is the population of New York City? \_\_\_\_\_

About 23.2% of all Mexicans live in Mexico City. What is the population of Mexico City? \_\_\_\_\_

3. It is predicted that in the year 2010 the population of New York City will be 8,600,000 and that 2.9% of all Americans will live in New York City. If these predictions are true, what will the population of the United States be in the year 2010? \_\_\_\_\_

It is predicted that in the year 2010 the population of Mexico City will be 35,000,000 and that 29% of all Mexicans will live in Mexico City. If these predictions are true, what will the population of Mexico be in the year 2010? \_\_\_\_\_