Lesson 10

1 Solve the word problems:

a) Michael had **n** red balloons and **m** blue balloons. He shared these balloons among his 4 friends equally. How many balloons did each of his friends get?

_____

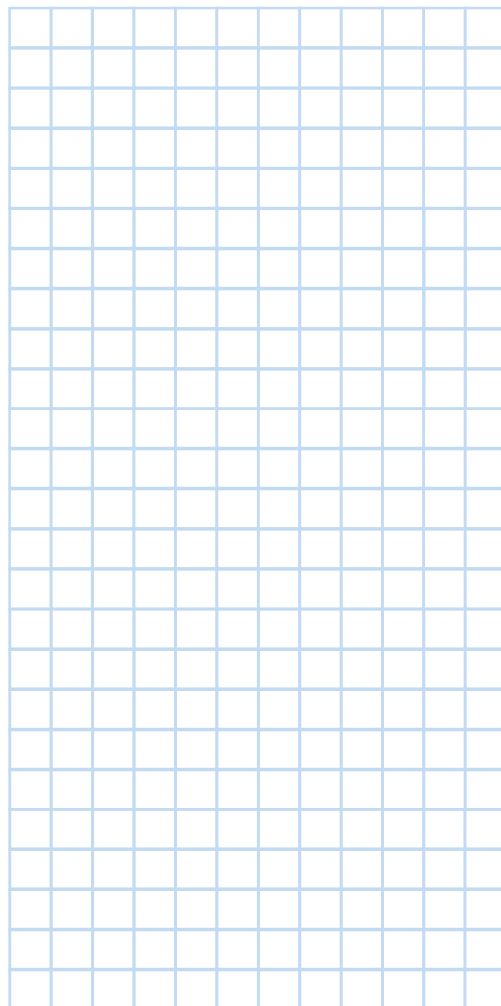b) Katie caught **b** fish and Andrew caught 3 times more than Katie. How many more fish did Andrew catch?

_____

c) Andrew had **d** dollars. How much money does he have left after buying 4 ice creams at **x** dollar each?

_____

d) Sophia has **c** notebooks. In April she gave away **b** notebooks. In May she donated twice as many as in April. How many notebooks does she have left?
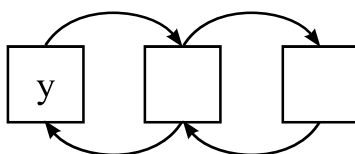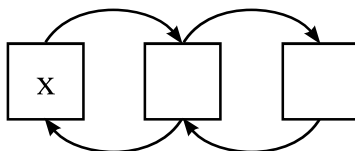
_____

2 Analyze and solve the equations:

$x \times 5 + 2 = 27$

$x \times 5 = 24 -$

$x \times 5 =$

$x =$

$x =$

$y \div 7 + 3 = 4$

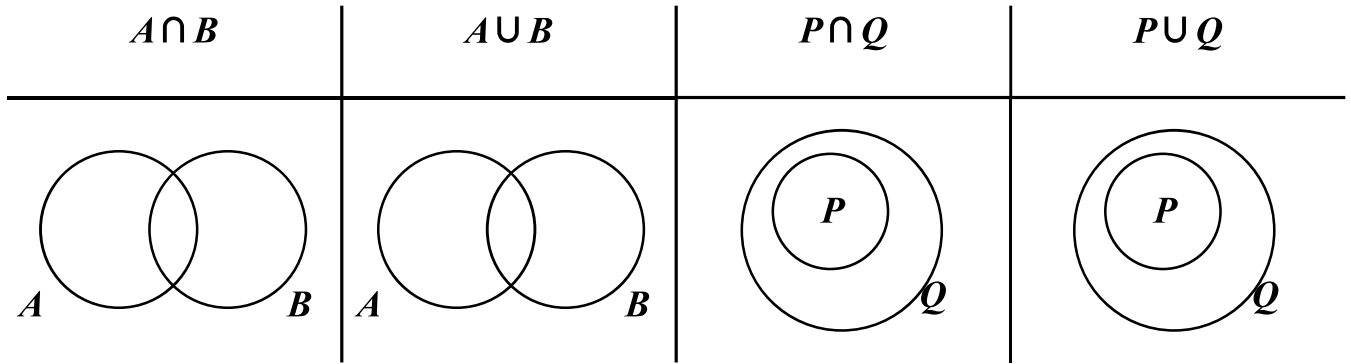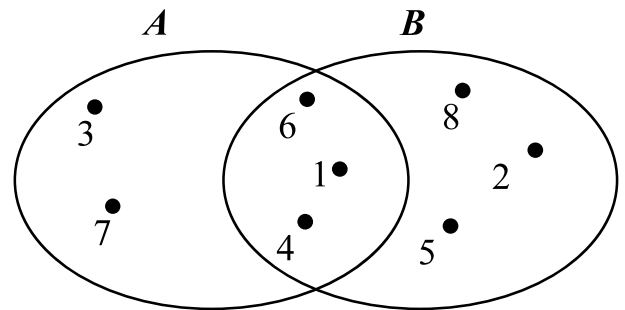$y \div 7 =$

$y \div 7 =$

$y =$

✓   ✓

3   Shade the following Venn Diagrams:

$A \cap B$	$A \cup B$	$P \cap Q$	$P \cup Q$

4   List the elements in the following sets:

a) $A =$ _____

b) $B =$ _____

c) $A \cap B =$ _____

d) $A \cup B =$ _____

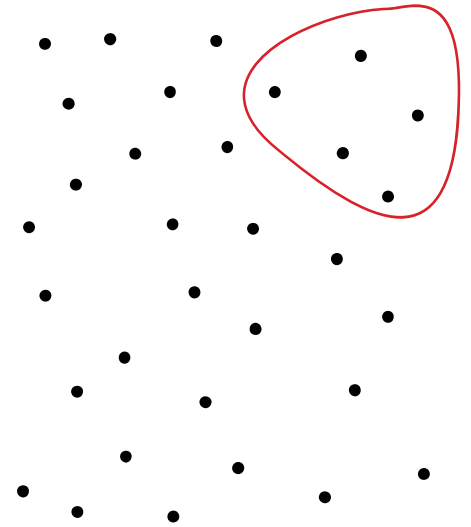**5**   Look at the Venn Diagram of the students' preferences for ice cream and chocolate:

a)   How many students like ice cream? _____

b)   How many students like chocolate? _____

c)   How many students like both
ice cream AND chocolate? _____

d)   How many students like either
ice cream OR chocolate? _____

e)   How many students like ice cream only? _____

f)   How many students like chocolate only? _____

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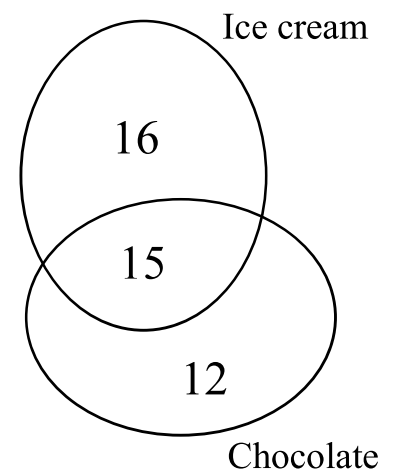
Division with Remainder

6

Group the points five per group:

a) How many points remain grouped? _____

b) How many points are grouped in total? _____

c) How many points are there in
   the drawing in total? _____

d) What is the meaning of the expression
   $5 \times 6 + 2$?
   _____

dividend   *quotient*

$$32 \div 5 = 6 \text{ rem. } 2$$

divisor   *remainder*

dividend   *quotient*

$$32 = 5 \times 6 + 2$$

divisor   *remainder*

7

Use the Multiplication Table to find the largest ...

multiple of 4 under 17 _____ | multiple of 6 under 21 _____

multiple of 5 under 43 _____ | multiple of 8 under 72 _____

8

Calculate. You may use the
multiplication table.

a) $6 \div 5 =$ _____

b) $43 \div 7 =$ _____

c) $26 \div 5 =$ _____

Program for 21÷4:

1) Find the largest multiple of 4 under
21. It is $4 \times 5 = 20$

2) Subtract the largest multiple from the
dividend to find the remainder:

$21 - 20 = 1$. So, **21 ÷ 4 = 5 rem. 1**

Long Division with Remainder

Write one digit per cell.

To subtract the biggest multiple from the dividend write it underneath the dividend.

Keep the 1's decimal places, 10's, etc in the same column.

```
      4
  6 | 2 9
    | 2 4
        5
```

> Make sure the remainder is **smaller** than the divisor!

9 Calculate via long division:

```
8 | 3 5        7 | 2 6        6 | 4 2        9 | 8 5
```

10 Foxy Tail wants to buy chocolate for all the brothers. He has 50 mice pennies. A chocolate bar costs 9 mice pennies.
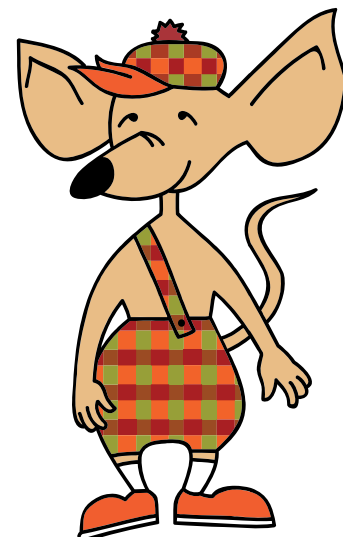
a) How many chocolate bars can he possibly buy?

_____

b) How much money will he spend on chocolate if he buys as many bars as possible?

_____

c) How much money will he have left after buying as many bars as he can?

_____

11 Take a look at the Cat Island Senate. It has three members: Mr. Red, Mr. White and Mr. Brown.

Today they got together to discuss some important issues about Cat Island cheese supplies. They are wearing red, white, and brown togas.

Mr. Red: Did you notice that the colors of our togas are different from our last names?

The person in white toga: Yes, you are right.

Can you tell who is wearing which toga?

_____

12 Four brothers played soccer and accidentally broke a window in Mr. Brown's house. The police arrived and obtained the following testimony:

LJ: Foxy Tail did not do it.
FT: It was either Jake the Mouse or Pop Eye.

Which or the brothers broke the window?

_____

13 The four brothers were talking about ages of neighbor cats:

LJ: Mr. Red is older than Mr. Brown.
FT: Mr. Grey is younger than Mr. Yellow.
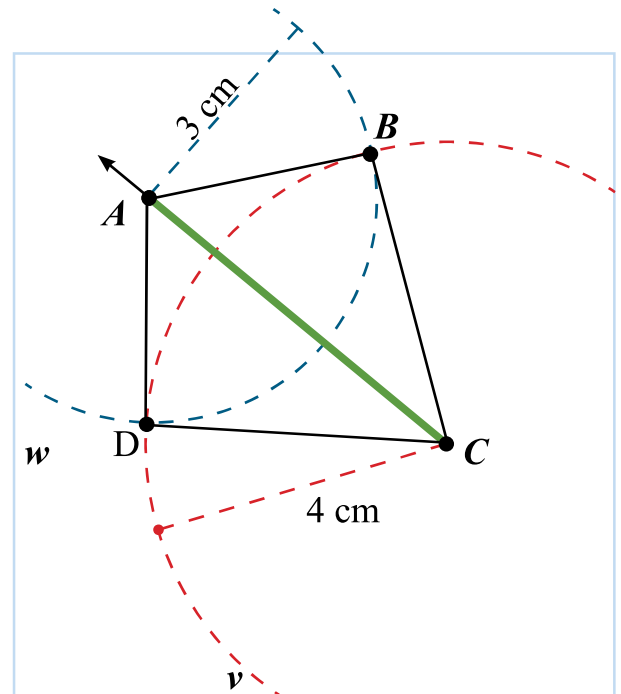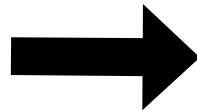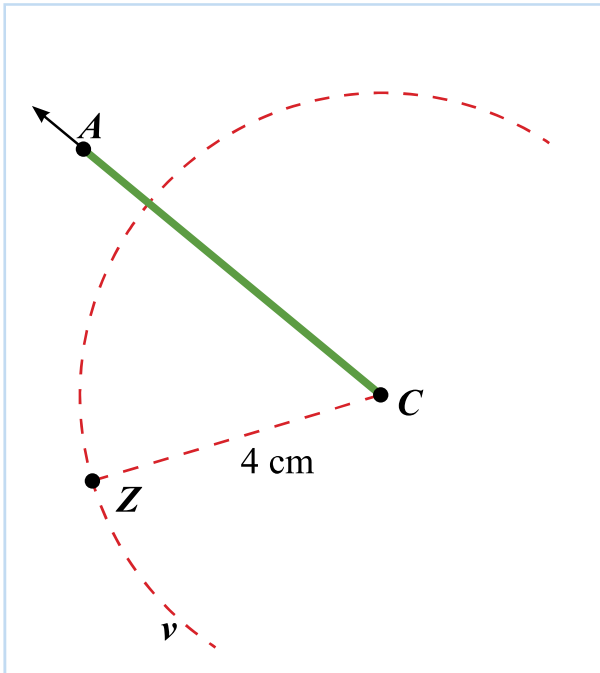*JM:* Mr. Yellow is older than Mr. Red.

Only one of them lied.

Who is the oldest? _____   Who is the youngest? _____

Constructing a Kite from Its Side and Diagonal

A quadrilateral with two pairs of equal, adjacent sides is called a *kite.*

3 cm

A

C

4 cm

Z

v

v = Circ(*C*, 4 cm)

Any point of *v* is ___ cm away from *C*.

B

A

w

D

C

4 cm

v

Analyze the following algorithm for constructing a rhombus *ABCD* given its diagonal *AD* with a pair of sides length 4 cm and a pair of sides 3 cm long:

1. Plot *v* = Circ(*C*, 4 cm)
2. Plot *w* = Circ(*A*, 3 cm)
3. Find {*B*, *D*} = *v* ∩ *w*
4. Connect points *A*, *B*, *C*, *D*

12 Modify the algorithm above to construct a kite *PQRT* with a pair of sides 3 cm long and a pair of sides 2 cm long:

1. Plot *g* = Circ(_____

2. Plot *h* = Circ(_____

3. Find {*Q*, *T*} = _____

R

P

4. Connect points *P*, *Q*, *R*, *T*.

Congratulations, you've constructed a kite!

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14 Look at the rhombus **ABCD**. Its diagonals intersect at point **W**. Measure its sides with a ruler:

|AB| = _____ cm |BC| = _____ cm

|CD| = _____ cm |AD| = _____ cm

Classify the angles as **acute**, **obtuse**, or **right**:

∠DAB is _____

∠AWD is _____

∠CBA is _____

∠CWB is _____   ∠CBD is _____

∠ABD is _____   ∠DWC is _____

Do you see any axes of symmetry?

_____
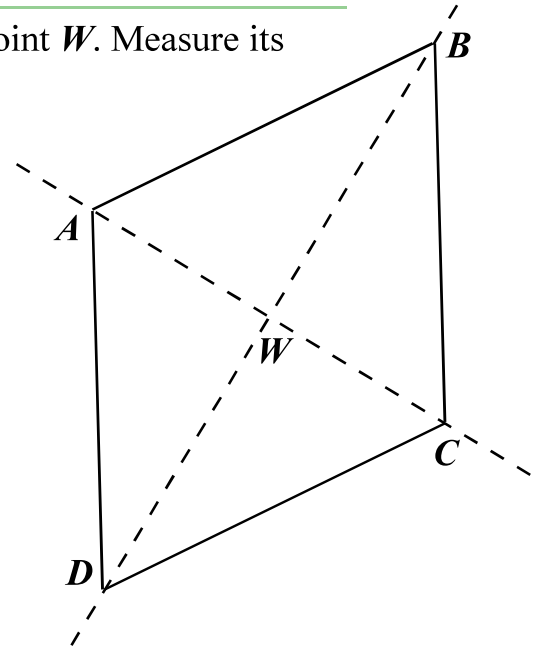
Coordinates and Motion

15 Moving point K_1 four cells right produces point K_2.

4 cells →

a) What do you notice about the coordinates of the points K_1 and K_2?

b) The motion of the points A_1 and B_1 produces points A_2 and B_2 respectively. Plot the points A_2 and B_2 and find their coordinates.

B_1 (,)

c) What do you notice about the coordinates of A_2 and B_2?

+ 4

K_2 (6, 4)

K_1 (2, 4)

A_1 (,)

d) What do you think will happen to the coordinates of a point that moves to the left?

0   5   10