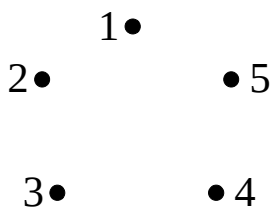
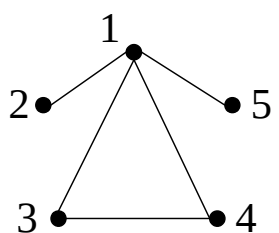
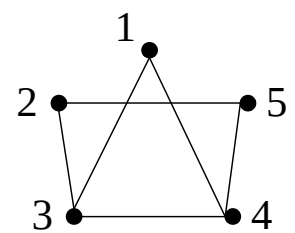


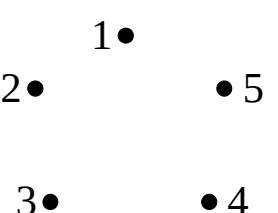
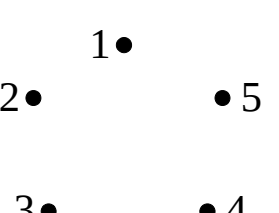
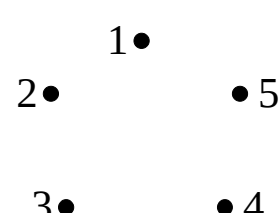
Lesson № 5

1

Meanwhile, our mice discover new facts about the inhabitants of the Cat Island who like to visit each other.

Each of five cats is a friend of all others	Cats that visit each other ...	
	... in the winter.	... in the summer.
		

Finish the graphs:

Cats that visit each other ...		
... in the winter AND in the summer	... in the winter OR in the summer	Cats that DO NOT visit each other in the summer
		

2

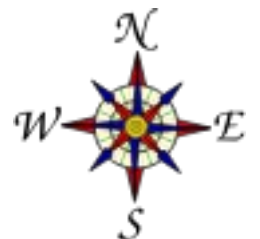
There are two cat tribes living on the island. The cats from the South tribe always lie, while the cats from the North tribe always tell the truth. JM met cats Miayu and Mrrrr from the two different tribes. After he asked them if they were married he got the following answers:

Miayu: *We are both married.*

Mrrrr: *I am married.*

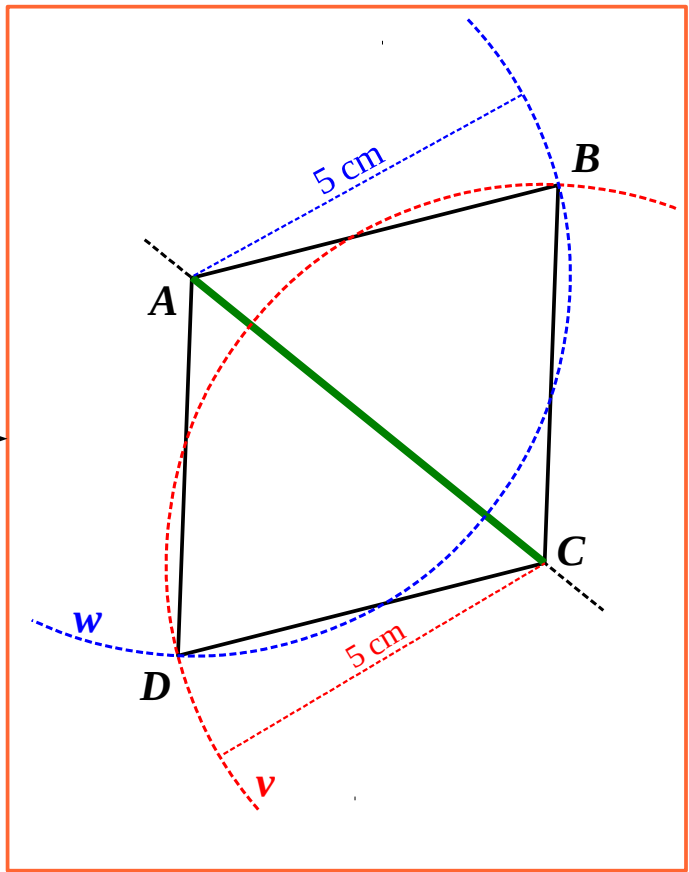
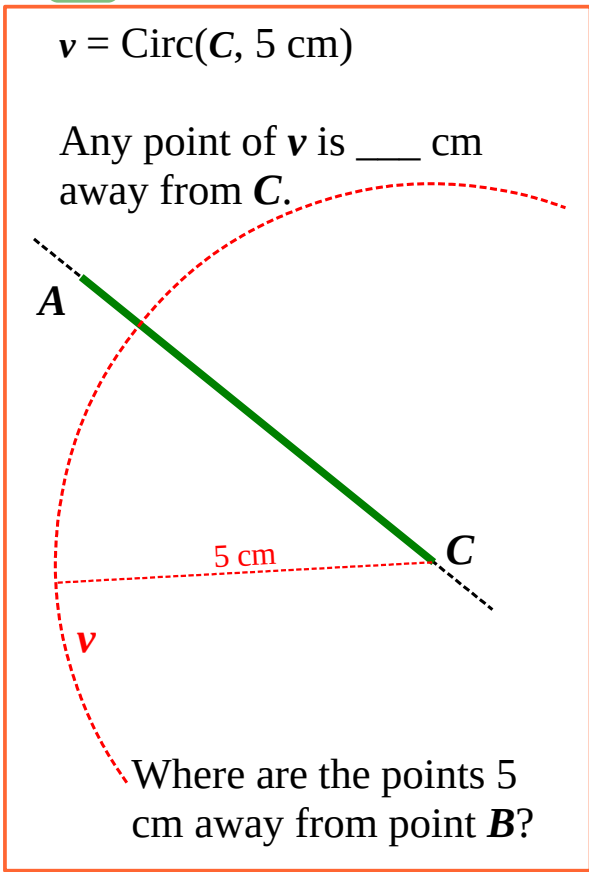
Which of the two answers is a lie? _____

To which tribe does Mrrrr belong? _____



3

Constructing a Rhombus (Diamond) by its Side and a Diagonal.



Analyze an algorithm to construct a rhombus $ABCD$ given its diagonal AD with sides 5 cm:

R

1. Plot $v = \text{Circ}(C, 5 \text{ cm})$
2. Plot $w = \text{Circ}(A, 5 \text{ cm})$
3. Find $\{B, D\} = v \cap w$
4. Connect points A, B, C, D

P

1. Plot
2. Plot
3. Find $\{Q, T\} =$
4. Connect points P, Q, R, T

Modify the algorithm to construct a rhombus $PQRT$ sides 4 cm:

4

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?

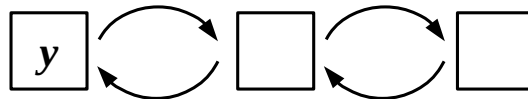
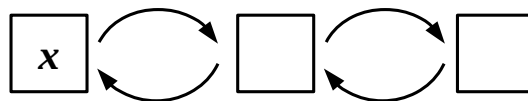

C. Andrew had d dollars. How much money does he have left after buying 4 ice-creams at x dollar each?

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?


5

Analyze and solve the equations

$x \times 5 - 2 = 27$			
$x \times 3 = 27 +$			
$x \times 3 =$			
$x =$			
$x =$			

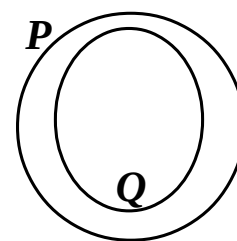
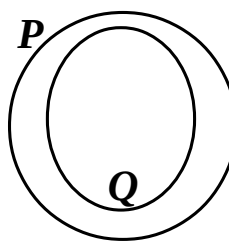
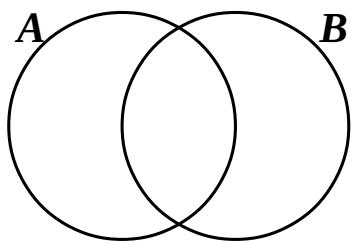
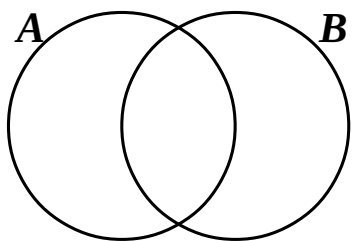


$y : 7 + 3 = 4$			
$y : 7 =$			
$y : 7 =$			
$y =$			



6 Shade the following Venn Diagrams:

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



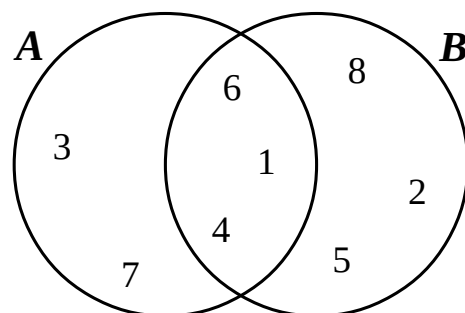
7 List the elements in the following sets:

$A =$ _____

$B =$ _____

$A \cap B =$ _____

$A \cup B =$ _____



8 Look at the diagram of the students' taste preferences:

How many students like ice-cream? _____

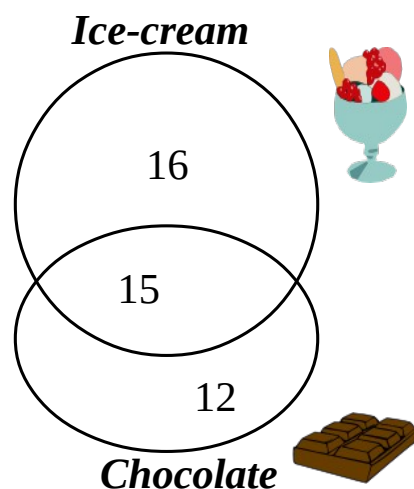
How many students like chocolate? _____

How many students like both ice-cream AND chocolate? _____

How many students like both ice-cream OR chocolate? _____

How many students like ice-cream only? _____

How many students like chocolate only? _____



How many students like this? 

9

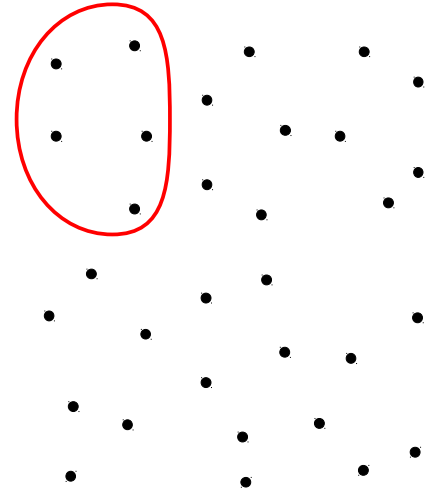
Division with Remainder

Group the points by five per group.

How many points remain grouped? _____

How many points in total are grouped? _____

How many points are totally on the drawing? _____



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

Dividend

32 : 5 = 6 rem. 2

Divisor

Quotient

Remainder

⇔

Dividend

32 = 5 × 6 + 2

Divisor

Quotient

Remainder

10

Use Multiplication Table to find the biggest ...

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

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

11

Calculate. You may use multiplication table.

$36 : 5 =$ _____

$43 : 7 =$ _____

$26 : 5 =$ _____

Program: 21 : 4

1. Find the biggest multiple of 4 under 21: 20

$20 : 4 = 5$

2. Subtract the biggest multiple from the dividend: 1

$21 : 4 = 5 \text{ rem. } 1$

Column Division with a Remainder

Write one digit per cell.

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

Keep units under units, tens under tens, etc.

	4		
6	2	9	
-	2	4	
		5	

Make sure the remainder is SMALLER than the divisor!

12

Calculate in column:

8	3	5		

7	2	6		

!	6	4	2	

9	8	5		

13

Foxy Tail wants to buy chocolate for all the brothers. He has 50 mice pennies. A chocolate bar costs 9 mice pennies.



How many chocolate bars can he possibly buy?

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

How much money will he have left after maximal shopping?

14 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? _____

15 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 of the brothers broke the window? _____

16 The four brothers were telling 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.

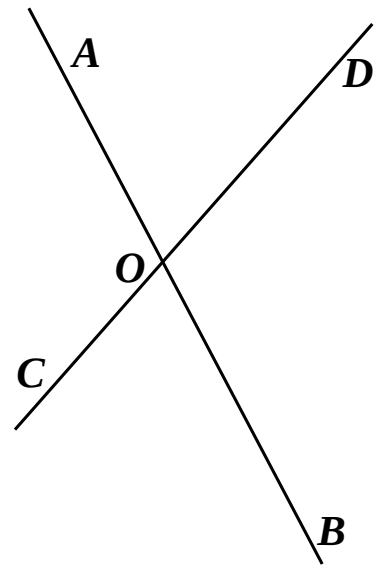
Who is the youngest? _____ Who is the oldest? _____

Angles

A straight line splits plane into two semi-planes.

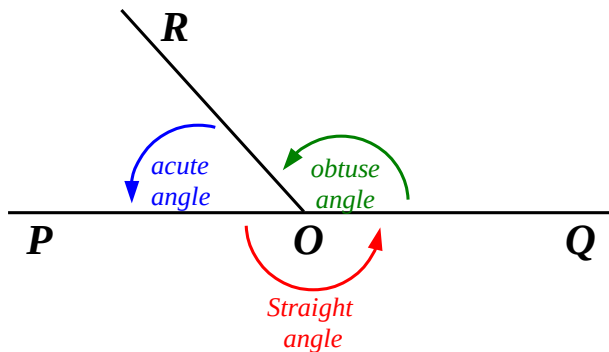
Two intersecting lines split it into four parts.

Each part is called an **angle**.



The sides of an angle are two rays with a common origin.

This point is called a **vertex**.



A semi plane is also called a **straight angle**.

Ray [**OR**] splits a semi plane into two unequal parts:

$\angle POR$ and $\angle QOR$.

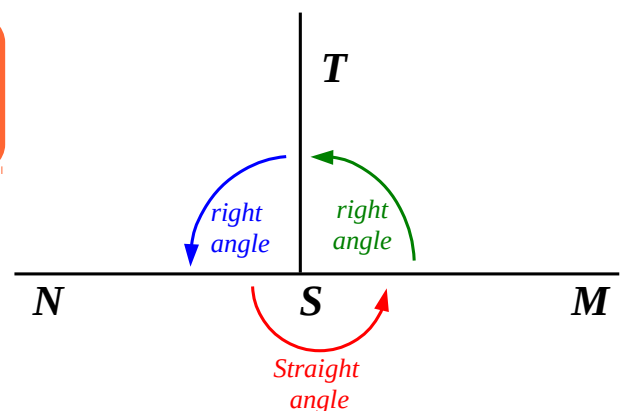
The smaller angle is called an **acute angle**.

The bigger angle is called an **obtuse angle**.

Ray [**ST**] splits semi plane into two equal parts:

$\angle NST = \angle TSM$.

Such equal angles are called **right angles**.

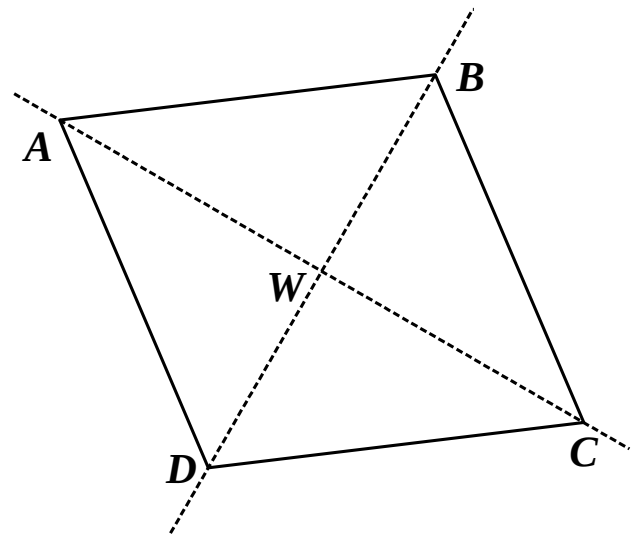


17

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

$|AB| = \underline{\hspace{2cm}}$ cm $|BC| = \underline{\hspace{2cm}}$ cm

$|CD| = \underline{\hspace{2cm}}$ cm $|AD| = \underline{\hspace{2cm}}$ cm



Classify the angles as acute, obtuse, or right:

$\angle DAB$ is _____

$\angle AWD$ is _____

$\angle CBA$ is _____

$\angle CWB$ is _____

$\angle CBD$ is _____

$\angle ABD$ is _____

$\angle DWC$ is _____

Do you see any axis of symmetry? _____

18

Coordinates and Motion:

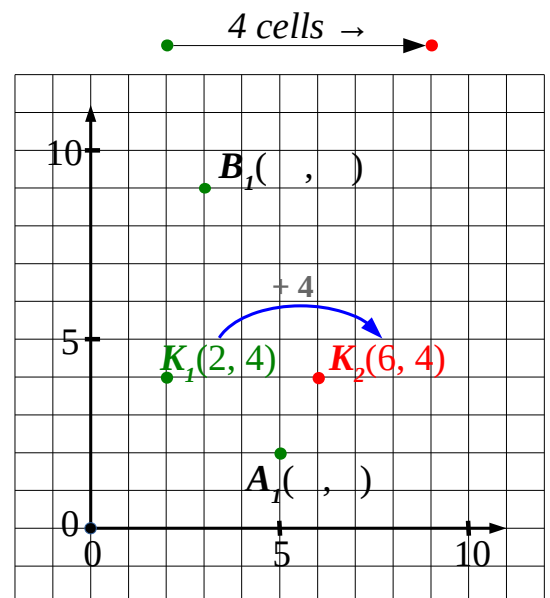
Moving point K_1 four cells right produces point K_2 .

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

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.

What do you notice about coordinates of A_2 and B_2 ?

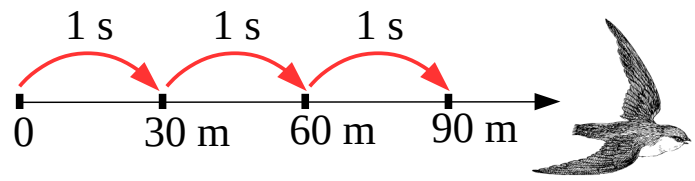
What do you think will happen to the coordinates of a point that moves to the left?



The distance that an object moves within a unit of time is called **speed**.

19 Explain the meanings of the following statements:

1. The speed of a fox is 15 km/h
2. The speed of a swift is 30 m/s
3. The speed of snail is 12 cm/h
4. The Earth moves about the Sun 30 km/s
5. A speed train in Shanghai moves 500 km/h

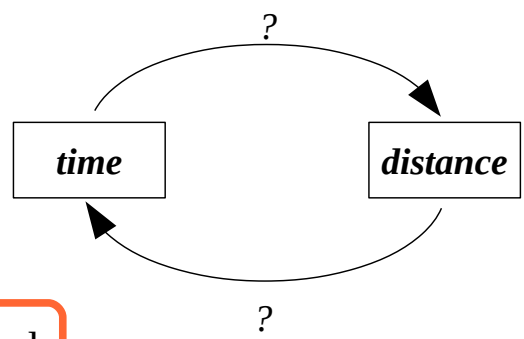


20 A raft flows down the river.

The speed of the river flow is 6 kilometers per hour: $v = 6 \text{ km/h}$							
Time: t	1h	2h		4h		8h	
Distance: s			18 km		36 km		60 km

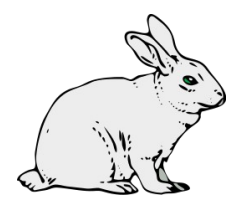
21 Which operation did you use to obtain the distance from the time?

What is the back operation? What does it allow us to find?



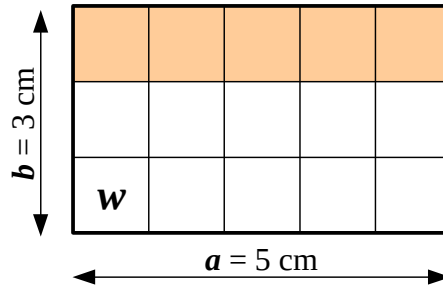
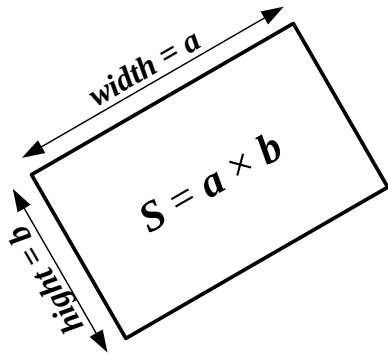
Distance = Time × Speed

22 A fox moved 18 km in 2 hours. A rabbit moved 21 km in 3 hours. Which of them was moving faster?

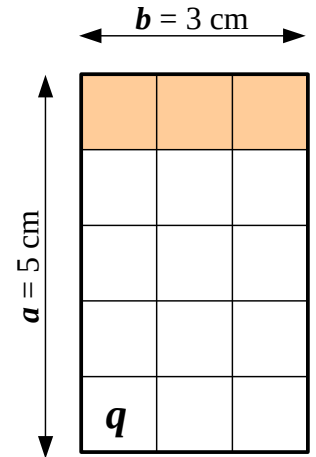


Commutative and Distributive Properties of Multiplication:

The areas of rectangles w and q are the same



$$S = 5 \times 3 = 15 \text{ (cm}^2\text{)}$$



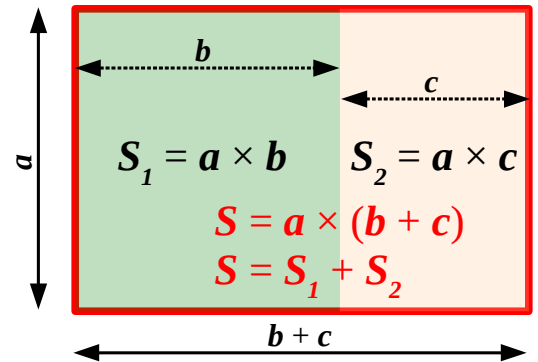
$$S = 3 \times 5 = 15 \text{ (cm}^2\text{)}$$

1 cm²

Properties of Multiplication:

Commutative: $a \times b = b \times a$

Distributive: $a \times (b + c) = a \times b + a \times c$



23

Open parenthesis using the distributive property of multiplication. Calculate where possible.

$$5 \times (10 + b) = \underline{\hspace{2cm}}$$

$$7 \times (10 + 5) = \underline{\hspace{2cm}}$$

$$8 \times (x + 2) = \underline{\hspace{2cm}}$$

$$(8 + 10) \times 4 = \underline{\hspace{2cm}}$$

24

Write the compositions of the numbers in tens and units:

$$75 = \square \text{ t} + \square \text{ u}$$

$$34 = \square \text{ t} + \square \text{ u}$$

$$40 = \square \text{ t} + \square \text{ u}$$

$$91 = \square \text{ t} + \square \text{ u}$$

$$30 = \square \text{ t} + \square \text{ u}$$

$$5 = \square \text{ t} + \square \text{ u}$$