

Lesson 7

1 Write the expressions for the problems below:

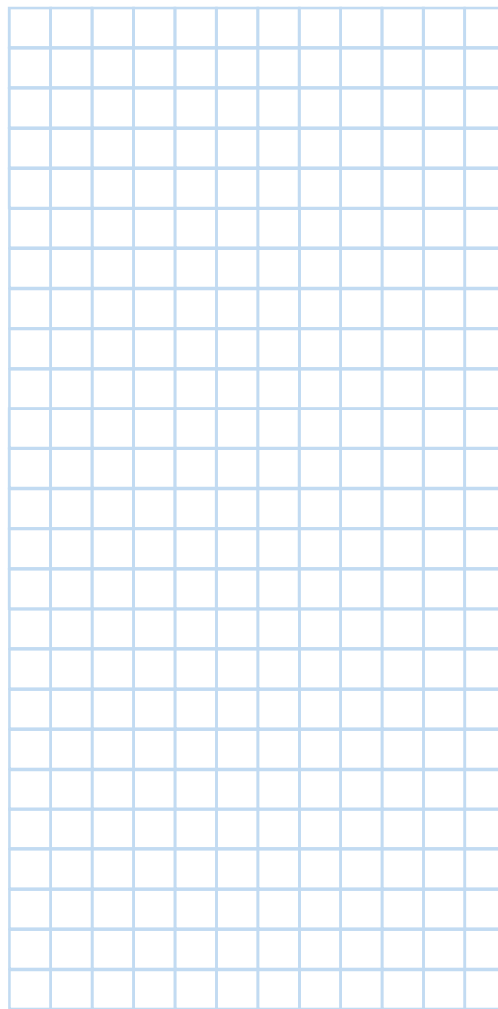
a) There are 35 cookies in 7 identical boxes.
How many cookies are in each box?

b) There are m cookies in y identical boxes.
How many cookies are in each box?

c) There are m cookies in y identical boxes.
How many cookies are in 5 boxes?

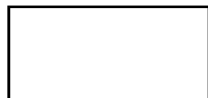
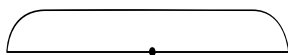
d) There are m cookies in y identical boxes.
How many cookies are in b boxes?

e) There are 56 oranges in 8 identical baskets.
How many oranges are in w baskets?

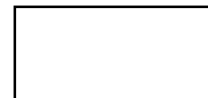
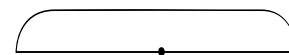


2 Pick the diagram that represents each equation. Use the diagrams to solve the equations and then check your answer.

$63 - x = 7$



$63 \div x = 7$



3 Find the answer without calculating:

$$823 - 642 + 241 - q + 118 - 240 - g + 641 + 9 - 822 + g - 118 + q =$$

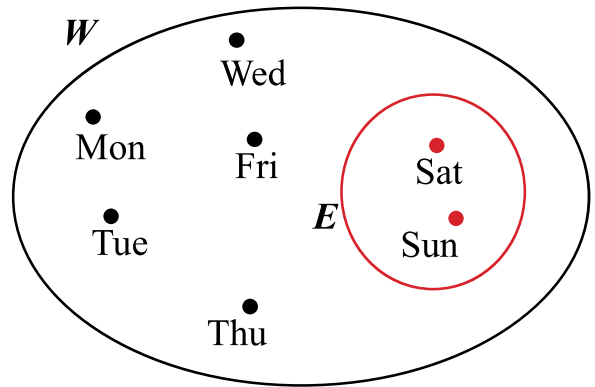
Subsets

4

How many elements are in the set E ? _____

How many elements are in the set W ? _____

Check ✓ the TRUE statements and ✗ the FALSE statements:



$W \cap E = \emptyset$

$W \cap E = E$

If every element of set A belongs to set B , then A is called a **subset** of B :

$A \subset B$

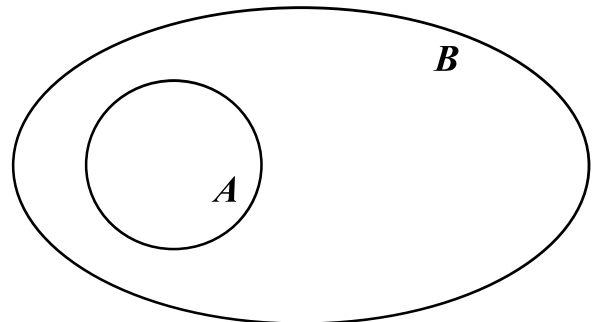
If **any** element of set A does **not** belong to set B , then A is **not a subset** of B :

$A \not\subset B$

5

Let A be a set of birds, B be a set of animals, C a set of fish. Complete the Venn diagram for these sets:

Check ✓ the TRUE statements and ✗ the FALSE statements:



$A \subset B$

$A \subset C$

$A \cap B = A$

$C \subset B$

$A \cap C = \emptyset$

$A \cap B = B$

$B \cap C = B$

$B \cap C = C$

$B \subset A$

6

Pick a correct symbol from: \subset , $\not\subset$, \in based on the Venn Diagram:

1 A

A B

m C

1 B

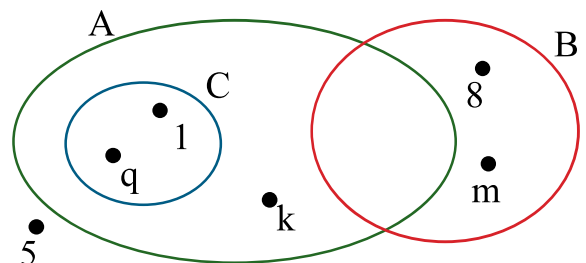
B A

8 C

1 C

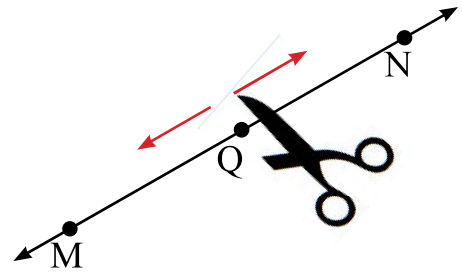
C B

8 B



Subsets of Straight Line

The points on the straight line MN are located on either side of point Q , which is forming two subsets.



A **ray** is a subset of a straight line limited on one end by its **origin**.

Unlike a straight line, a ray has an origin and extends only in one direction.

The first letter of a ray's name is the name of its origin.
The second letter is any point on the ray.

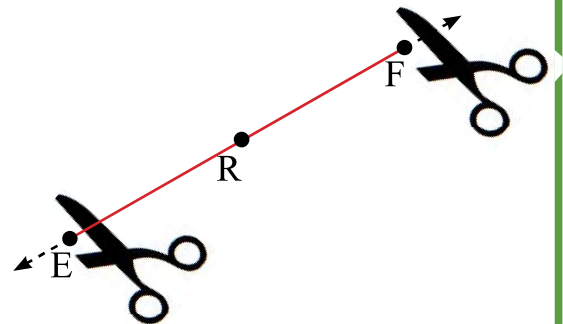
We will write ray QM as $[QM)$.

7 Based on the diagram above, check \checkmark the TRUE statements and \times the FALSE statements:

- | | | | | | |
|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|
| $[QM) \subset MN$ | <input type="checkbox"/> | $[QN) \subset [MN)$ | <input type="checkbox"/> | $[MN) \subset MN$ | <input type="checkbox"/> |
| $[MN) \subset [QN)$ | <input type="checkbox"/> | $[QM) \subset [NM)$ | <input type="checkbox"/> | $[QM) \subset [MN)$ | <input type="checkbox"/> |

A line segment is a **subset** of a straight line limited by two **endpoints**.

The notation for segment EF is $[EF]$.

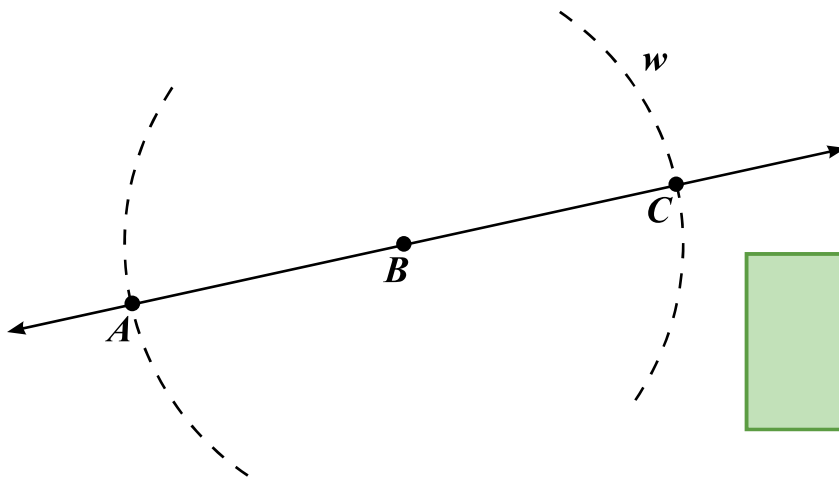


8 Based on the drawing above, check \checkmark the TRUE statements and \times the FALSE statements:

- | | | | | | |
|---------------------|--------------------------|-----------------|--------------------------|---------------------|--------------------------|
| $[EF] \subset [FE]$ | <input type="checkbox"/> | $R \in [EF]$ | <input type="checkbox"/> | $[RF] \subset [EF]$ | <input type="checkbox"/> |
| $E \notin [EF]$ | <input type="checkbox"/> | $E \notin [RF]$ | <input type="checkbox"/> | $[ER] \subset [EF]$ | <input type="checkbox"/> |

Making a Line Segment of an Equal Length

- 9 There are two points A and B on a straight line. Use a compass to find the position of point C such that $|BC| = |AB|$.



$Q = \{\text{Point } A, \text{Point } C\}$
 True or False?
 $Q \subset \text{Circ}(B, |AB|)$

Writing Program Steps

Plain English Writing

1. Plot a circle w with the center at point B that has a radius equal the distance from point A to point B .
2. Find point C on the intersection of the circle w and the straight line AB .

Symbolic Writing

Plot $w = \text{Circ}(B, |AB|)$

Find C : $C \in w \cap AB$

- 10 Use a *compass* to find point D such that $|CD| = |AB| = |BC|$

Choose whether to write your algorithm in plain English OR in symbolic form.

Writing Program Steps

Plain English Writing

1. Plot ...
2. Find ...

Symbolic Writing

Plot ...

Find D :

Find point E such that $|DE| = |AB|$.

Graphs

A **graph** presents objects and relationships between them.
 Its **nodes** are points that symbolize the objects.
Edges connect related objects.

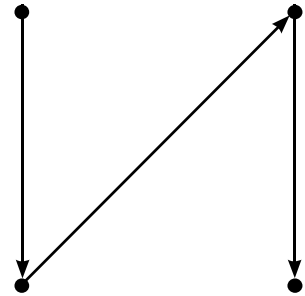
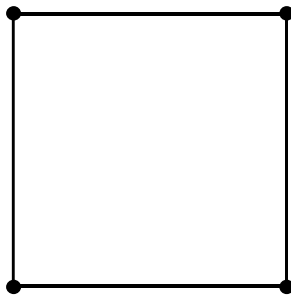
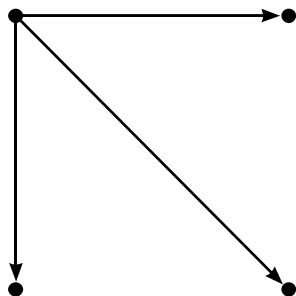
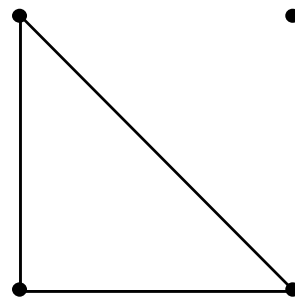
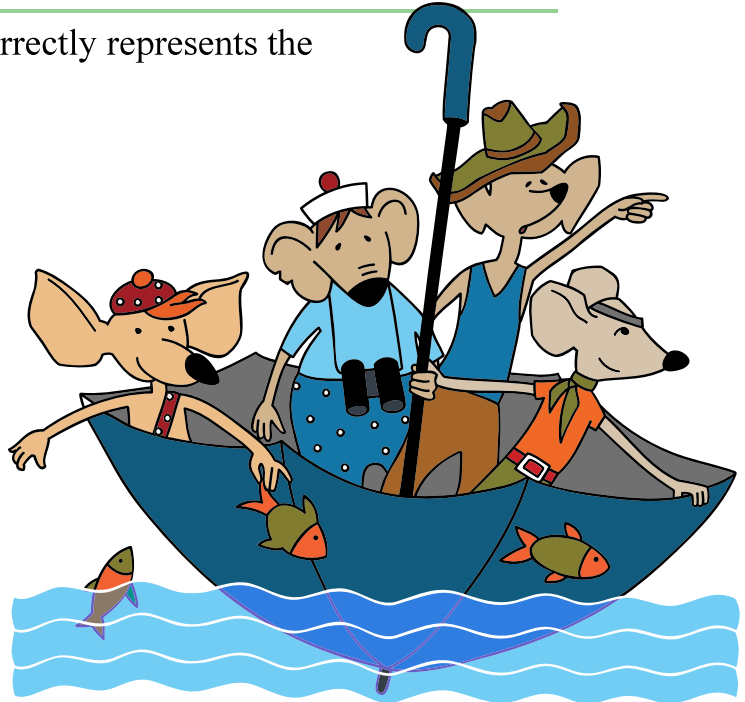
11 For each passage choose the graph that correctly represents the relationships described in it.

Just last Saturday three out of the four brothers discussed their future trip to the Cat Island.

After their ship was wrecked they were holding onto different pieces of wood. Foxy Tail had an umbrella. He was able to reach all of them and help them inside the umbrella.

Back at home the four brothers had a big mouse hole called Mouse Hall. Each brother had his own room. Each room was connected by long tunnels to two other rooms.

The four brothers had an arm wrestling tournament. Jake the Mouse beat all three of his brothers.



12

Jake the Mouse, Little Joe, Pop Eye and Foxy Tail found a cheese factory on the Island of Smart Cats and have decided to stay a while on the Island. They decided to dig themselves 4 mouse holes. But they need a shovel to do this.

So JM went to the Cat City to find it. Oh, wait! He needs our help...

The labels on these doors are completely **false**. Which door should he enter?



He found the shovel, but it was too small, so he decided to continue his search.

Here the labels on one of the doors are true and the labels on the other one are false.



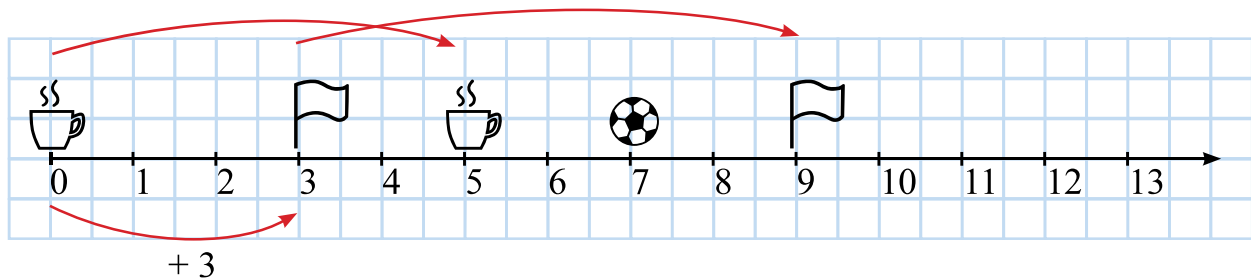
Which door would you choose?

Coordinates and Motion

13 The mug moves ___ units right from position ___ to position ___.

The flag moves ___ units right from position ___ to position ___.

Move the soccer ball 3 units right.



Coordinates in a Plane

14 Write the coordinates of the points *B*, *C*, *D*, *E*:

B: (,) *C*: (,) *D*: (,) *E*: (,)

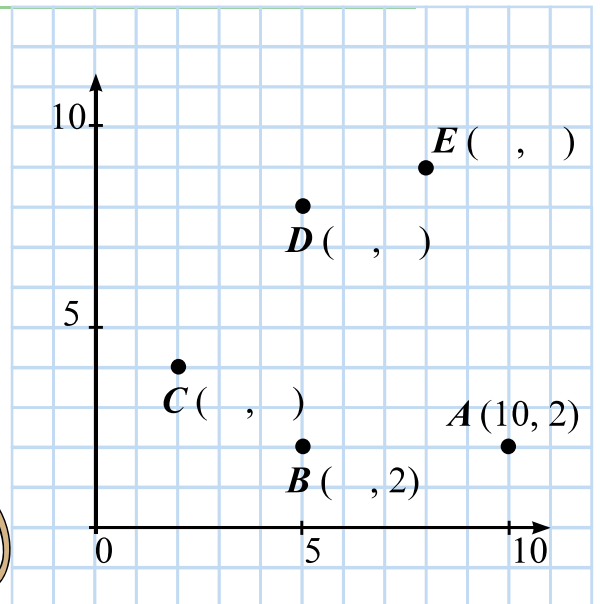
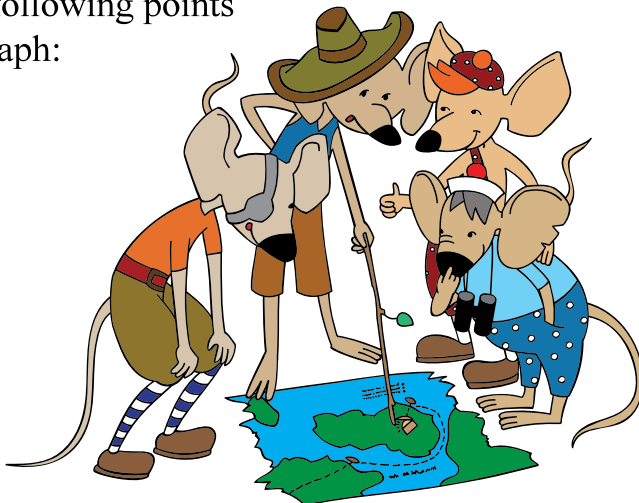
Plot the following points on the graph:

W(2, 10)

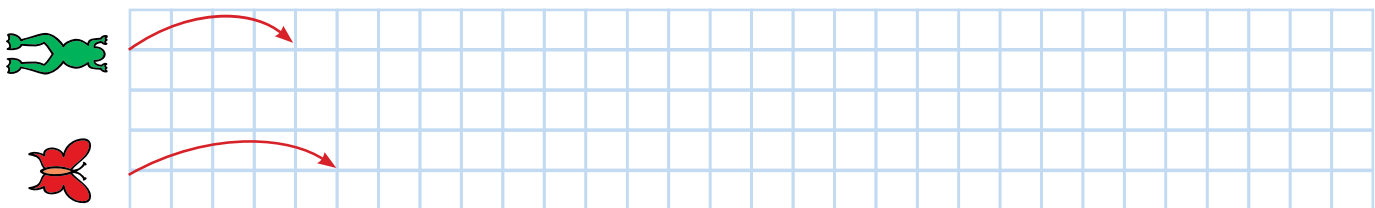
X(10, 5)

Y(3, 1)

Z(7, 5)



15 A frog jumps 4 cells in one jump. A butterfly covers 5 cells in one flight. Which of them is faster if the frog jumps 3 times in one second and the butterfly flies twice in one second?



Show the positions of the frog and the butterfly after 1 second, after 2 seconds.