

Important Concepts . . .

Preview Review



Mathematics

Grade 6

W3 - Lesson 1: Transformations

Important Concepts of Grade 6 Mathematics

W1 - Lesson 1	Basic Facts, Basic Operations, and Integers
W1 - Lesson 2	Place Value, Whole Numbers, Decimals, and Common Fractions
W1 - Lesson 3	Improper Fractions and Mixed Numbers
W1 - Lesson 4	Ratios and Percents
W1 - Lesson 5	Number Operations with Decimals
W1 - Quiz	
W2 - Lesson 1	Factors, Multiples, and Prime Factorizations
W2 - Lesson 2	Metric Measurement
W2 - Lesson 3	Perimeter and Area
W2 - Lesson 4	Surface Area and Volume
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W3 - Lesson 1	Transformations
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W3 - Lesson 3	Collecting and Analyzing Data
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W3 - Lesson 5	Probability and Outcomes
W3 - Quiz	

Materials Required: A textbook is not needed. This is a stand-alone course.

Mathematics Grade 6

Version 5

Preview/Review W3 - Lesson 1

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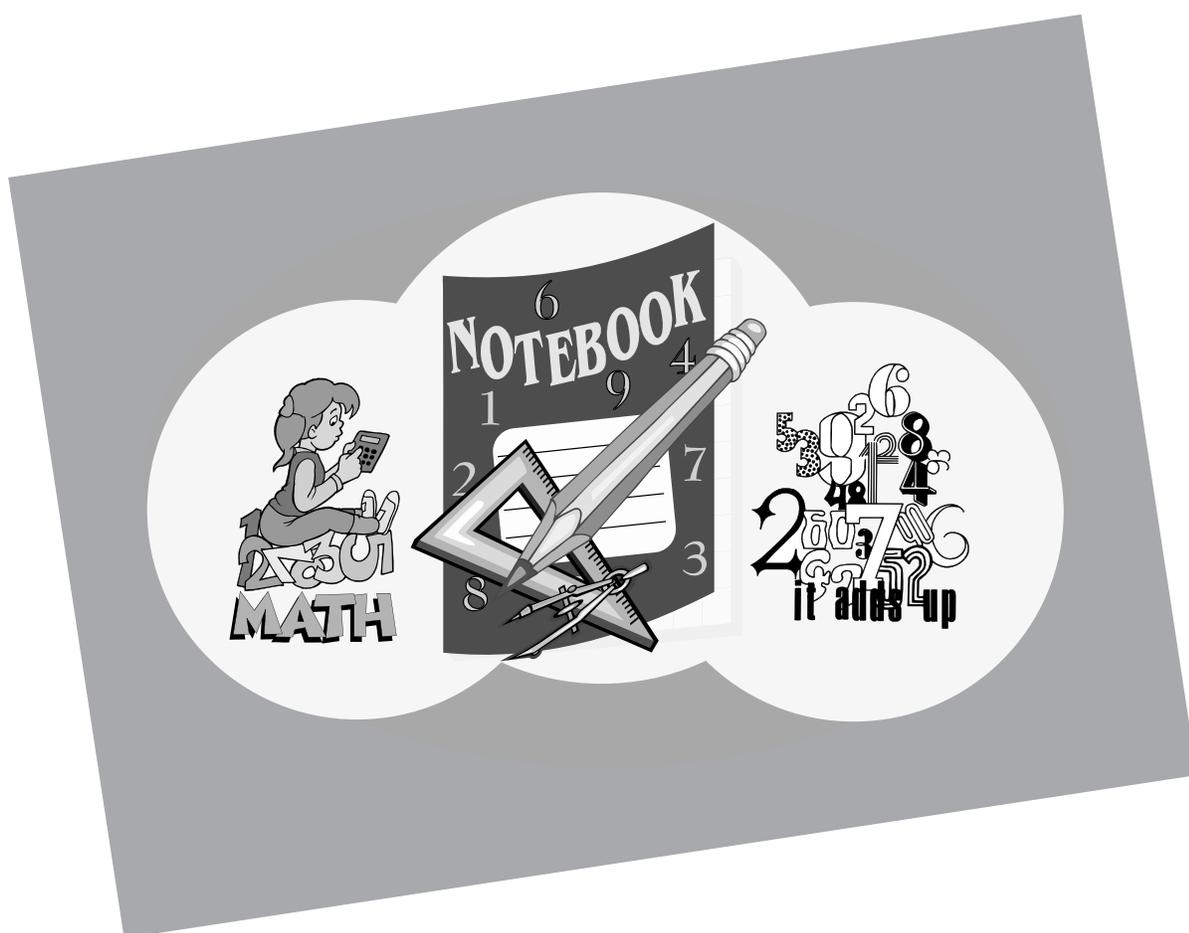
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Preview/Review Concepts for Grade Six Mathematics



*W3 - Lesson 1:
Transformations*

OBJECTIVES

By the end of this lesson, you should

- understand the basics of motion geometry
- slide, flip, and turn geometric figures accurately

GLOSSARY

flip - reversing or flipping an object

flip image - an exact image of the original image, but in reverse

flip line - lines showing the direction of the flip

slide - movement of a figure from one position to another

slide arrow - arrow showing the direction and distance of the slide

turn - movement of an object around a point; rotation

W3 - Lesson 1: Transformations

Welcome to W3 - Lesson 1! The actual names for each of the common words in the chart are more accurate, but you will use the common names in these lessons.

Common Names	Actual Names
slide	translation
flip	reflection
turn	rotation

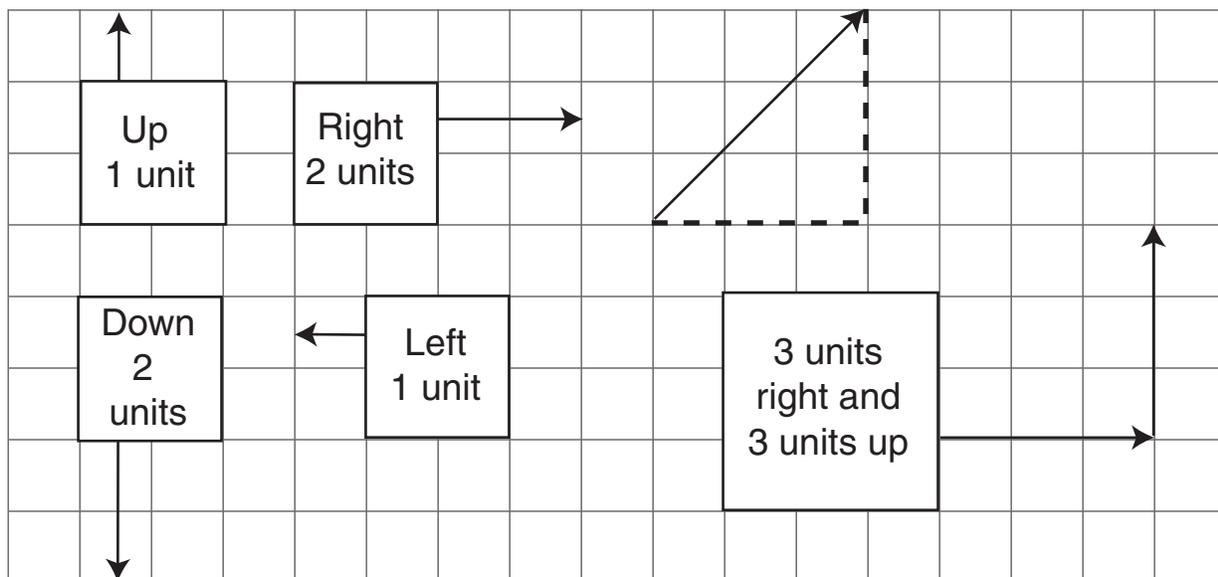
Motion geometry requires you to “see” the picture in your mind, but you can always try to move the object to be certain you moved it correctly.

Slides

A **slide** is the movement of a figure from one position to another. The figure in the new position is called the **slide image**.

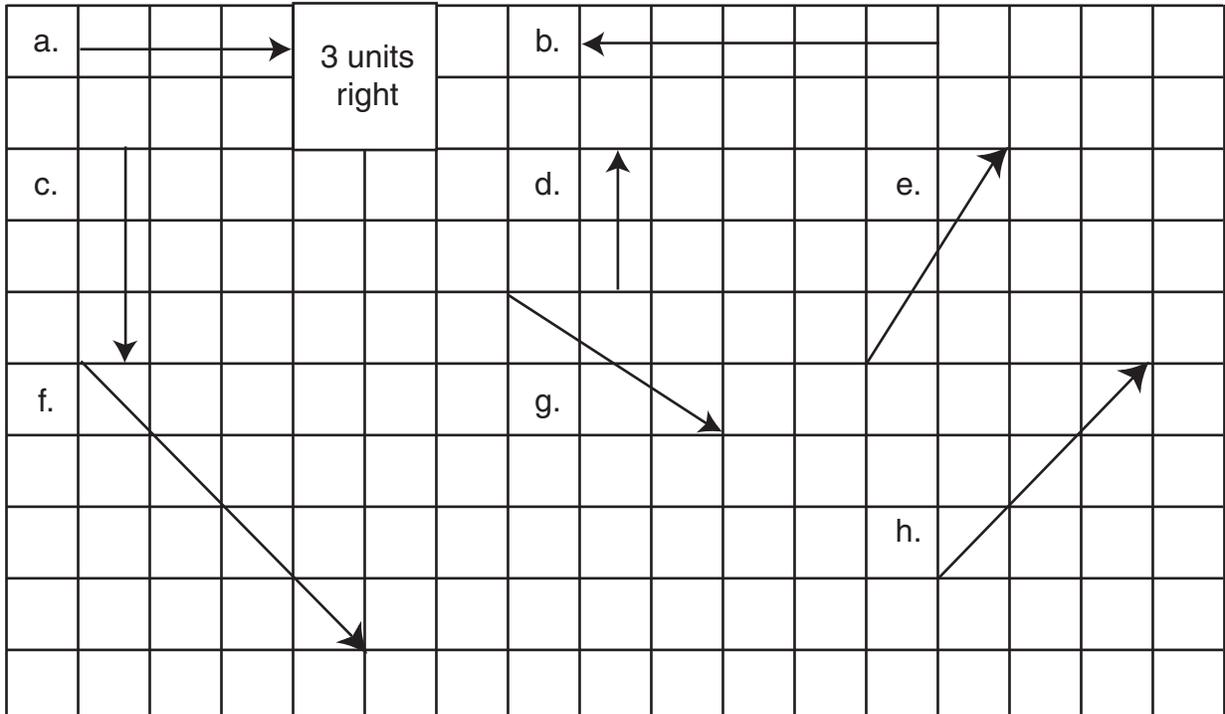
A **slide arrow** shows the direction and distance of the movement between the original figure and the slide image.

Below are some examples of slide arrows.



Questions

1. Write the meaning of each slide arrow. Write your answers below the grid in the spaces provided. The first one is done as an example.



a. ***Example: 3 units right*** _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

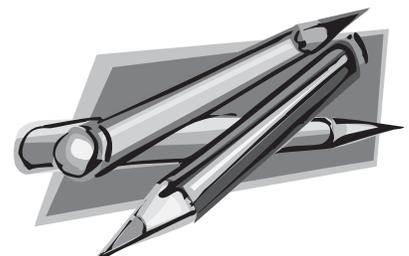
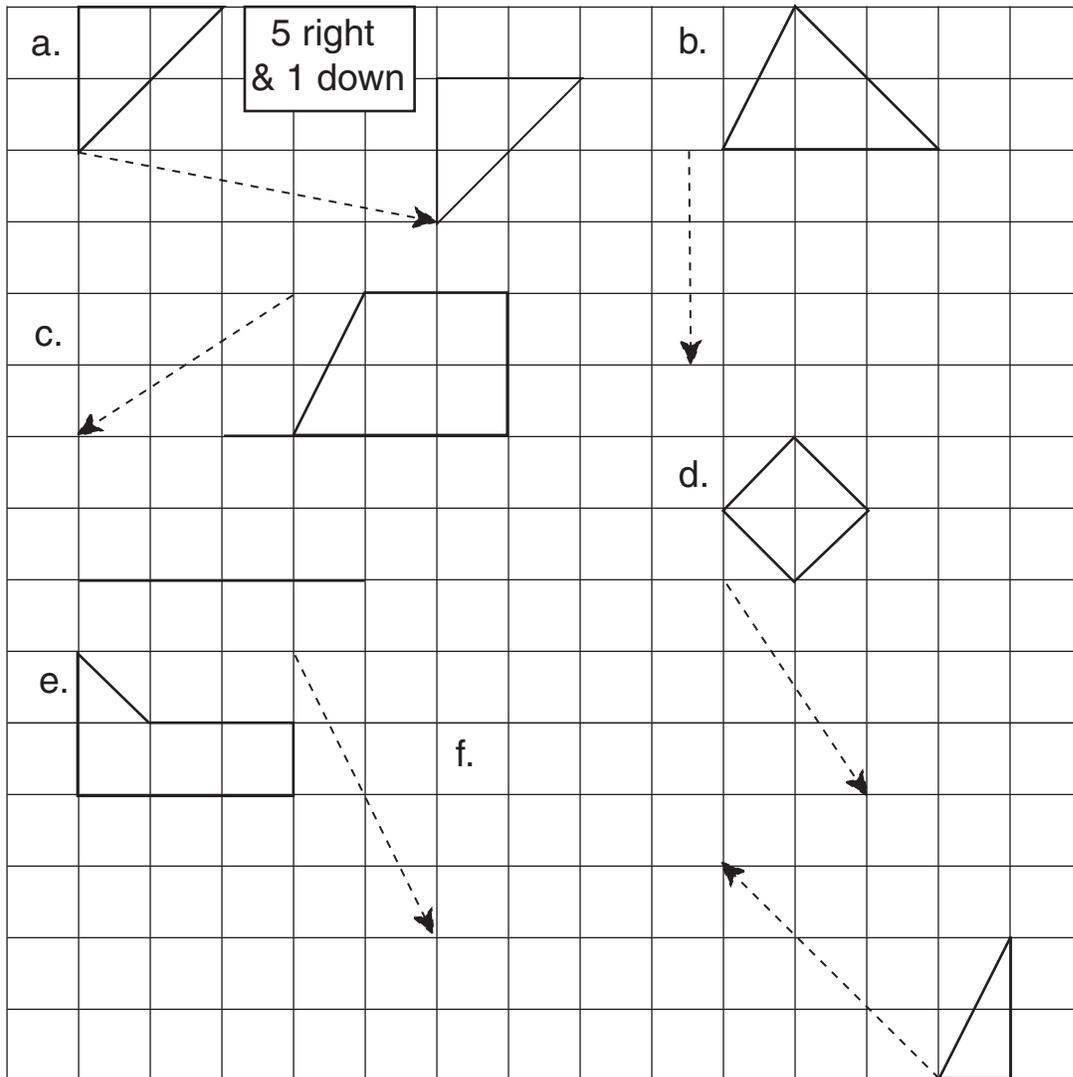
h. _____

2. Draw slide arrows that show the following moves. Name each arrow (question a, b, c, etc). Use the grid below to draw your arrows.

- a. left 3 units (L3)
- b. right 4 units (R4)
- c. down 3 units (D3)
- d. up 2 units (U2)
- e. left 4 units and down 4 units (L4, D4)
- f. right 4 units and up 4 units (R3, U4)
- g. right 4 units and down 1 unit (R4, D1)
- h. left 2 units and up 2 units (L2, U2)

a.					b.						c.			d.		
			e.				f.									
								h.								
		g.														

3. Draw the slide image for each of the following figures. The first one is an **example** of how it should be done. The slide arrow indicates the direction and length of the slide. **Label** each arrow to show how the slide was made.



4. Draw a slide image for each figure. Use the slide arrows for the direction and length of the moves.

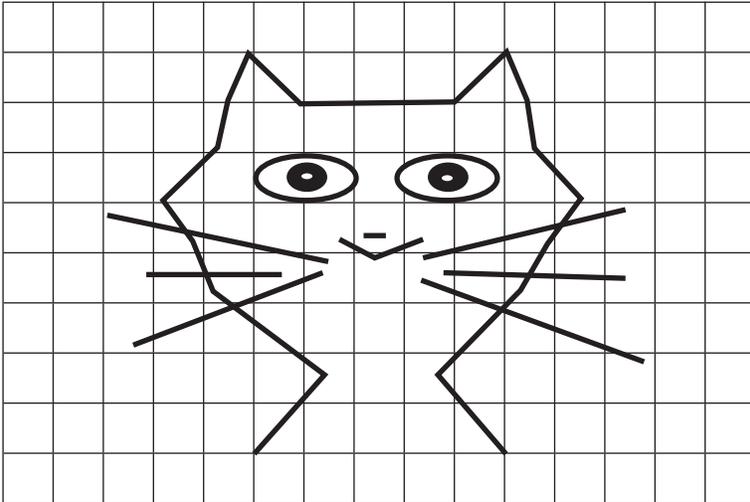
The grid contains five figures labeled a through e, each with a dashed arrow indicating a translation:

- a.** A house-like shape (a square on top of a trapezoid) with a dashed arrow pointing down and to the right.
- b.** A U-shaped figure (a rectangle with a smaller rectangle cut out of the top) with a dashed arrow pointing down.
- c.** A house-like shape (a square on top of a trapezoid) with a dashed arrow pointing up and to the left.
- d.** A right-angled triangle with a dashed arrow pointing up and to the right.
- e.** A house-like shape (a square on top of a trapezoid) with a dashed arrow pointing up and to the right.

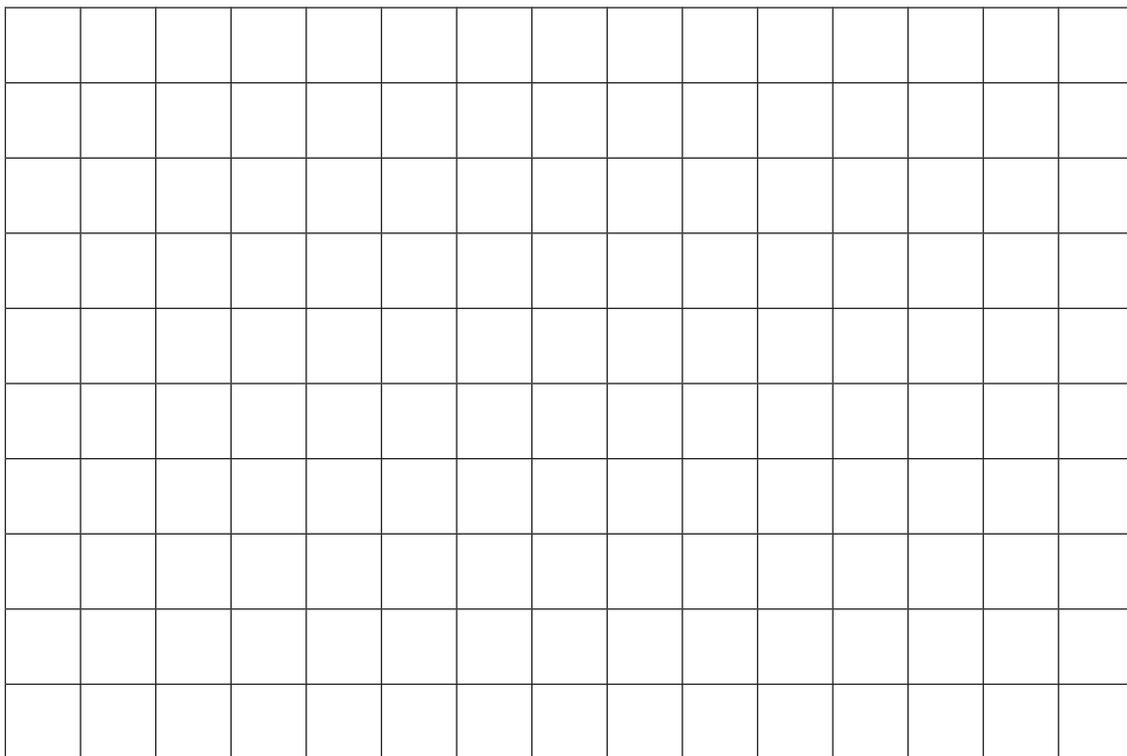
** Check for accuracy*

5. Draw the picture of the cat that is on grid 1 onto grid 2. Your drawing is an enlargement.

Grid 1



Grid 2

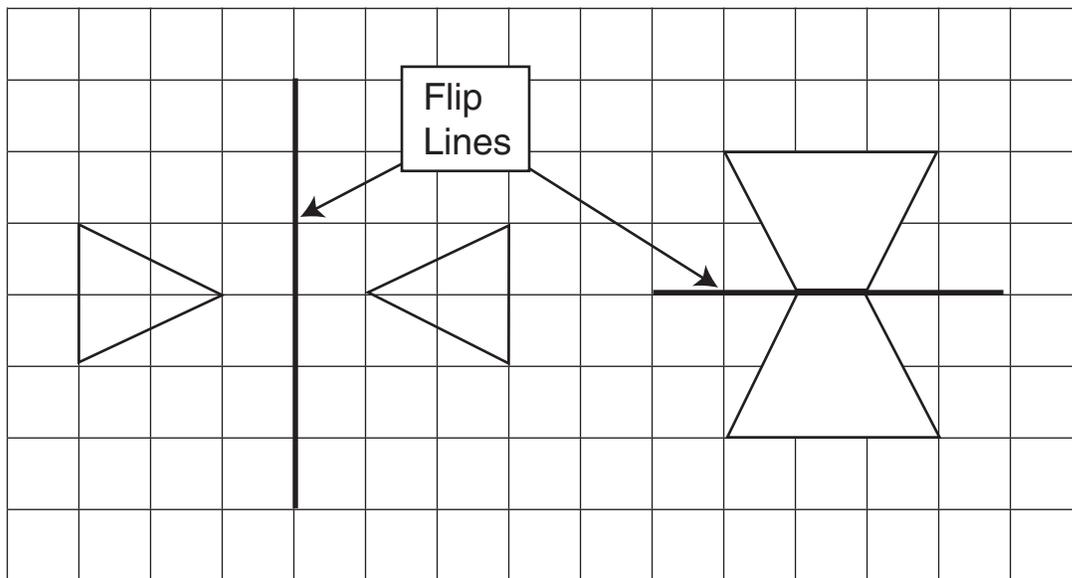
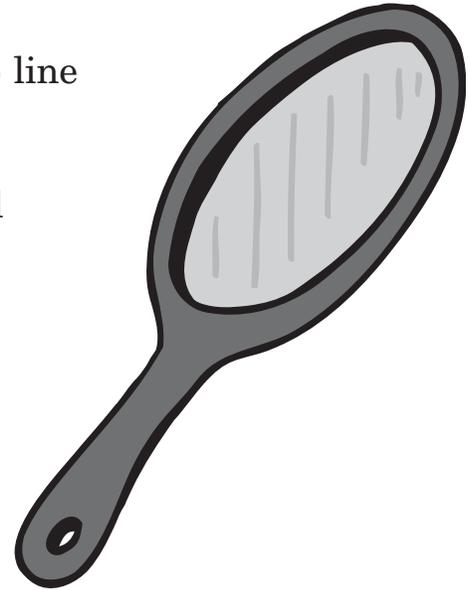


Flips

A **flip** occurs when an object or figure is flipped over. The shape of the object or figure is not changed. A flip can be done in any direction. The direction of the flip is determined by the **flip line**.

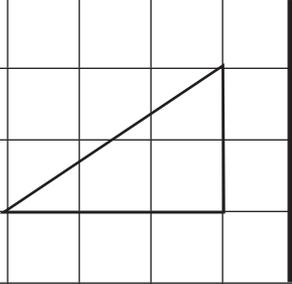
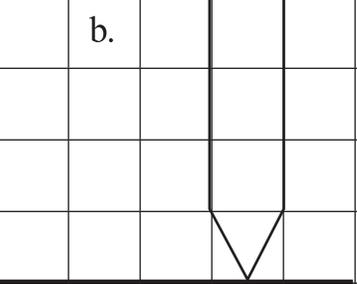
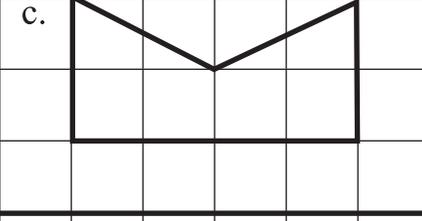
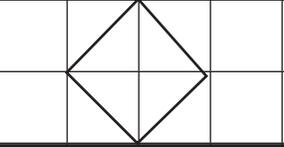
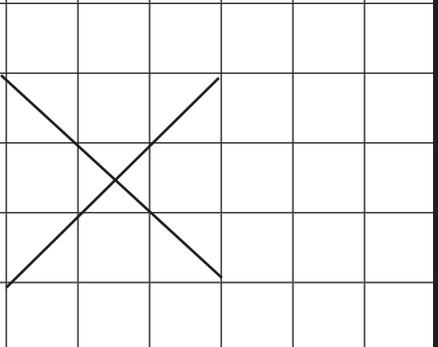
A **flip line** sets the direction of the flip. The flip line may touch the figure or may be away from it.

The **flip image** is an exact image of the original figure. The location of the flip image is determined by the flip line. When you draw a figure and a flip image on a paper, the figure and flip image will match perfectly when you fold the paper along the flip line. Below are two examples. Try folding the paper on the flip line.

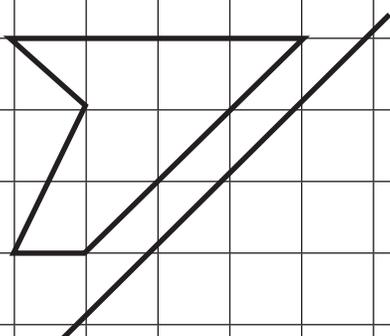


Questions

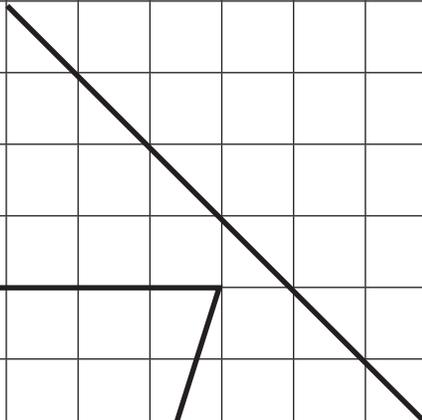
1. Draw a flip image of the following figures.

<p>a.</p> 	<p>b.</p> 
<p>c.</p> 	<p>d.</p> 
<p>e.</p> 	

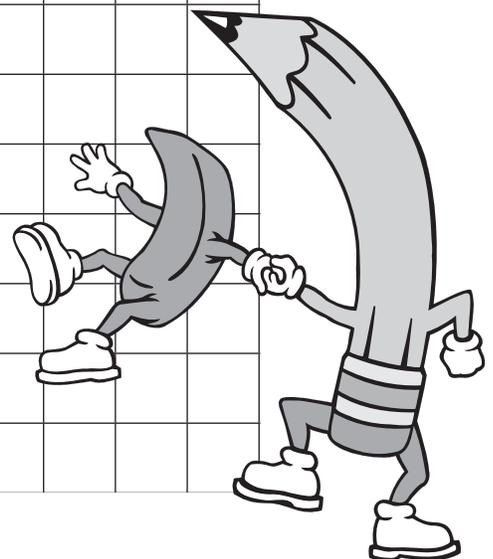
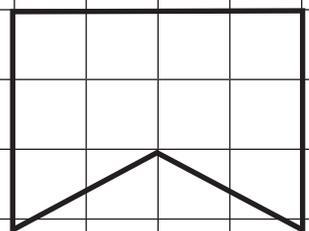
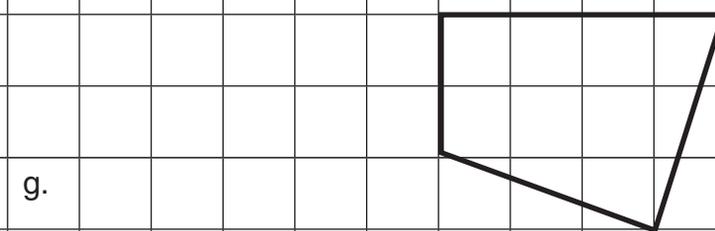
f.



h.

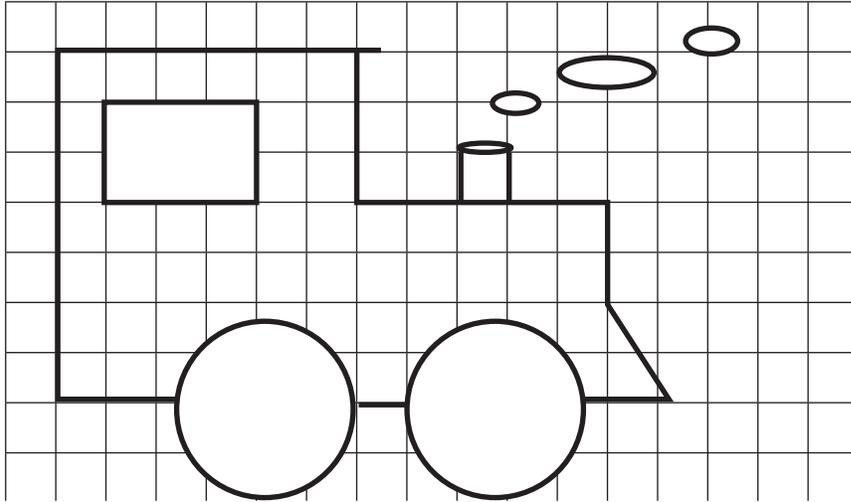


g.

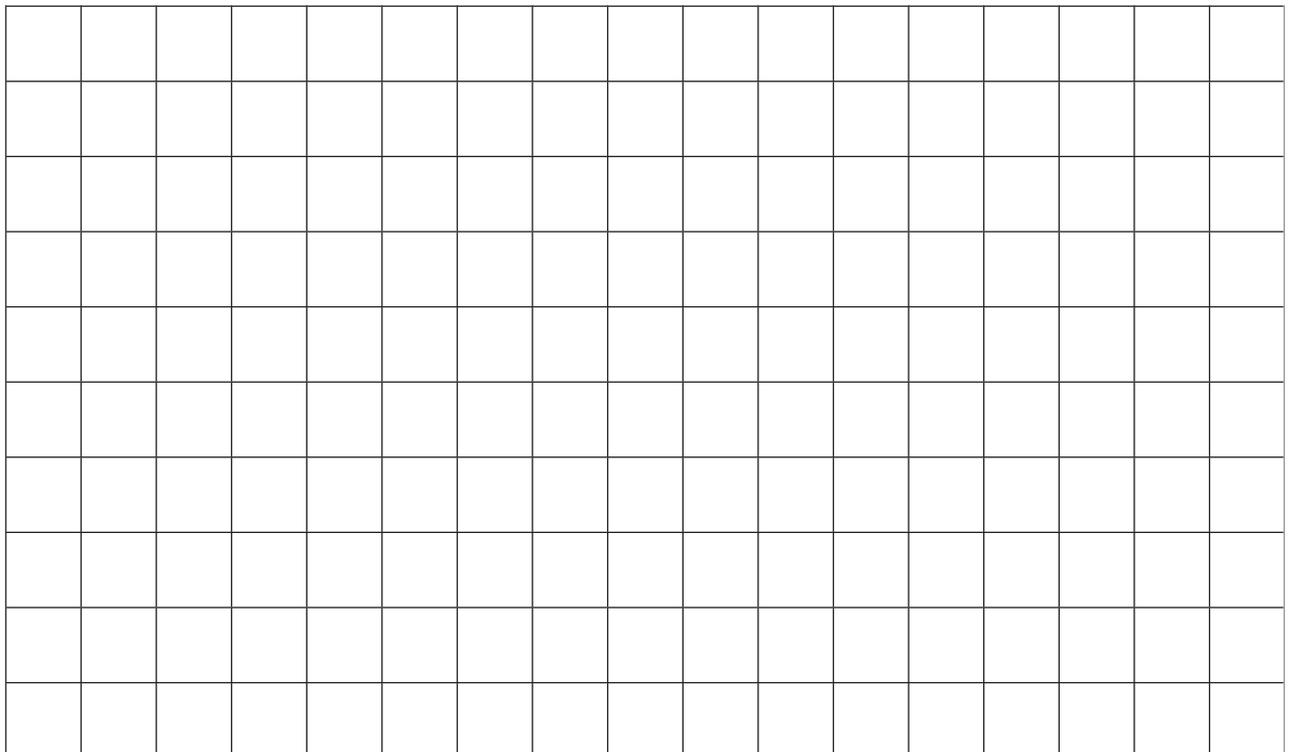


2. Draw an enlargement of this picture onto grid 2.

Grid 1



Grid 2



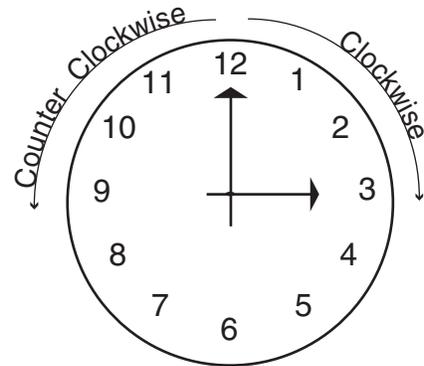
Turns

A **turn** occurs when an object or figure is rotated around a single point. This point is called the **turn centre**. A turn does not change the shape or size of an object or figure. Turns may be clockwise or counterclockwise.

You can work with the following turns. The circle with the dot in the middle is the turn centre.

Clockwise: the same direction as the hands of a clock move.

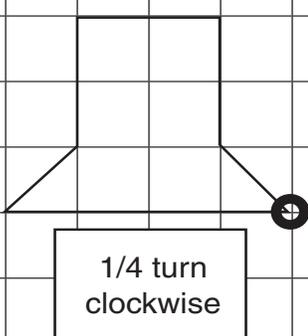
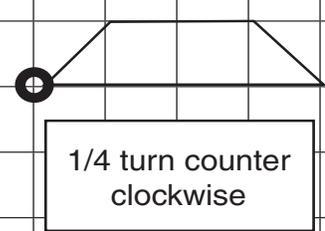
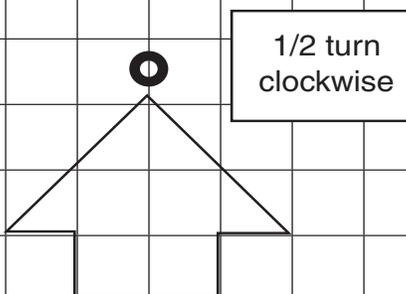
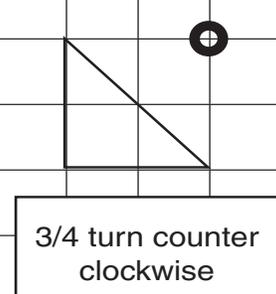
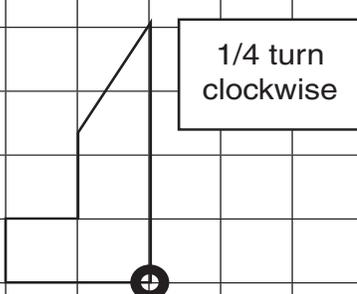
Counter Clockwise: the opposite direction as the hands of a clock move.



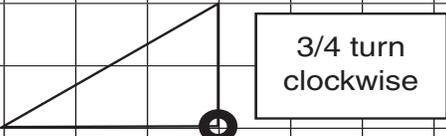
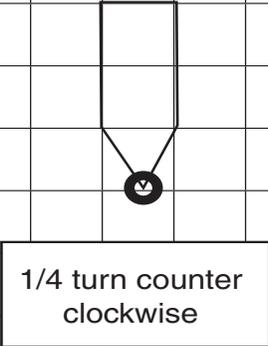
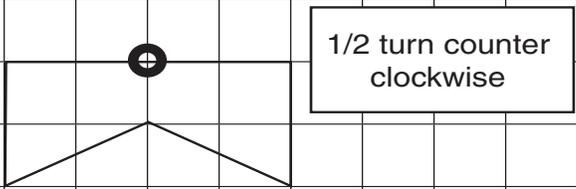
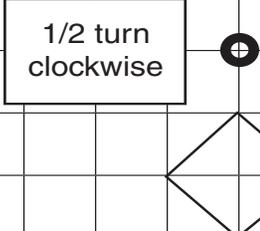
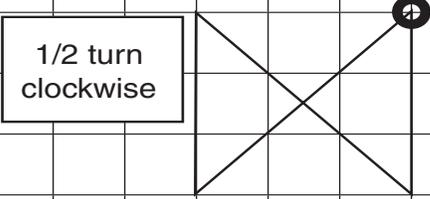
 Starting View	 1/4 turn clockwise	 1/2 turn clockwise	 3/4 turn clockwise
 Starting View	 1/4 turn counter clockwise	 1/2 turn counter clockwise	 3/4 turn counter clockwise

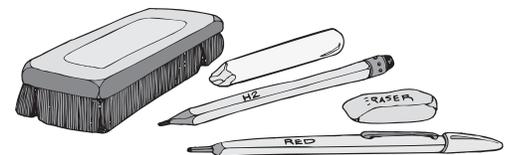
Questions

1. Follow the directions and draw a turn image of each of the following figures.

<p>a.</p>  <p style="text-align: center;">1/4 turn clockwise</p>	<p>b.</p>  <p style="text-align: center;">1/4 turn counter clockwise</p>
<p>c.</p>  <p style="text-align: center;">1/2 turn clockwise</p>	<p>d.</p>  <p style="text-align: center;">3/4 turn counter clockwise</p>
<p>e.</p>  <p style="text-align: center;">1/4 turn clockwise</p>	

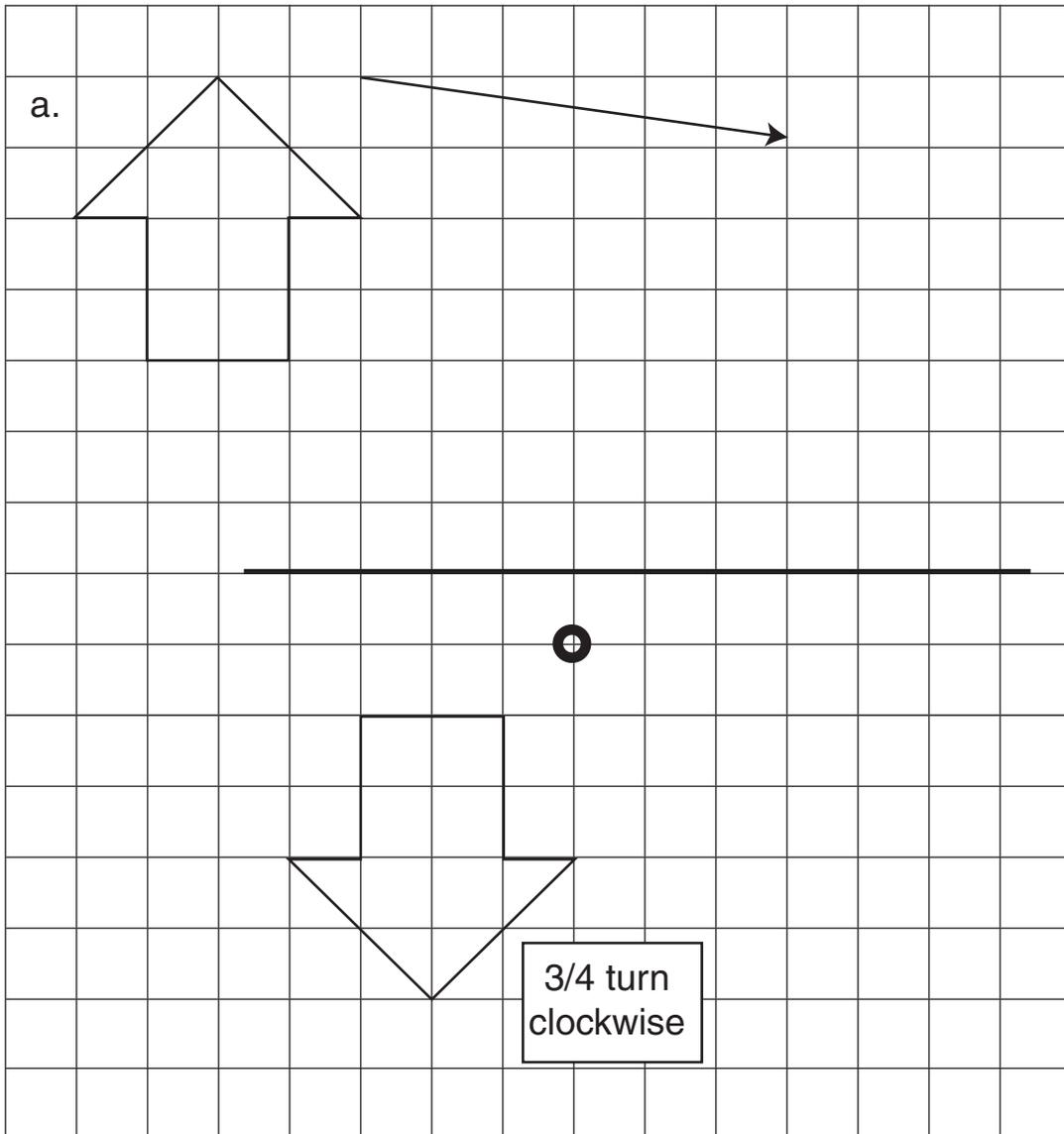
Check for accuracy

<p>f.</p> 	<p>g.</p> 
<p>h.</p> 	<p>i.</p> 
<p>j.</p> 	



Homework Assignment

Follow the directions in the order given to move the arrow around the grid: slide **first**, flip **second**, and turn **last**.



Self-Evaluation

Ask yourself some important questions. Write your answers in sentences for your teacher.

1. In this lesson, what part of your work was **excellent**?

2. In this lesson, what part of your work **needs improvement**?

3. If you want help for some of the work in this lesson, ask your teacher in this space.
