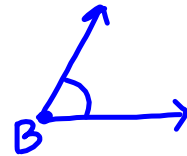
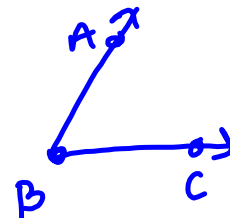


Questions on 5.3 HW? We are having a little quiz today, so look over the symbols on the board!!! Make sure that you can take a statement like: Angle B and draw it AND write it using symbols.

 $\angle B$  $\angle ABC$ 

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Symbol

1. =

2. $m\angle C$

3. \overline{GH}

4. $\triangle ABC$

5. \perp

6. $\angle ABC$

7. \overline{GH}

8. \cong

9. \sim

10. \overline{GH}

11. \overline{GH}

12. \parallel

Definitions

A. **Absolute value** - it is always equal to the positive value of the number inside the lines. It represents distance from zero.

B. **Congruent** - Figures that are the same size and shape are said to be congruent.

C. **Parallel** - used between segments, lines, rays, or planes

D. **Line segment with endpoints G and H.** Line segments can be congruent to each other. You would not say they were equal.

E. **Ray GH** - The letter on the left indicates the endpoint of the ray.

F. Used when comparing numbers of **equal value**.

G. **Plus or minus** - indicates 2 values, the positive value and the negative value

H. **Triangle ABC**

J. Indicates the **measure of an angle**. It would be set equal to a number.

K. **Perpendicular** - Lines, rays, segments, and planes can all be perpendicular

L. **Angle ABC** - The middle letter is always the vertex of the angle.

M. **Similar** - Figures that have been dilated are similar.

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20. Given: $m\angle C = 90^\circ$

$$a^2 + b^2 = c^2$$

$$x^2 + 10^2 = 26^2$$

$$x^2 + 100 = 676$$

$$\underline{-100 \quad -100}$$

$$\sqrt{x^2} = \sqrt{576}$$

$$x = 24$$

21. Given $m\angle ABC = 90^\circ$

22. Given: $\triangle BEC$, $\triangle CED$, and $\triangle DAB$ are right triangles.

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22. Given: $\triangle BEC$, $\triangle CED$, and $\triangle DAB$ are right triangles.

① $8^2 + 15^2 = (DB)^2$
 ② $(BE)^2 + 6^2 = 14^2$
 ③ $DB - BE = ED$
 ④ $6^2 + (ED)^2 = x^2$

23. Given: \overline{CF} bisects $\angle ECD$, $m\angle ECF = 2x + 10$, and $m\angle FCD = 3x - 18$. Find $m\angle FCE$.

Have you answered the question?
 This problem asks you to do more than find the value of x.

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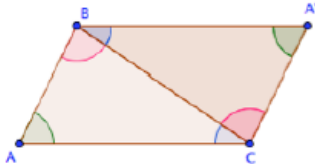
The segments and angles in each problem below are corresponding parts of 2 congruent triangles. Make a sketch of the two triangles. Then write a congruence statement for each pair of triangles represented. State the congruence pattern that justifies your statement.

	Congruence statement	Congruence pattern
1. $\overline{ML} \cong \overline{ZJ}, \overline{LR} \cong \overline{JB}, \angle L \cong \angle J$	a.	b.
2. $\overline{WB} \cong \overline{QR}, \overline{BP} \cong \overline{RS}, \overline{WP} \cong \overline{QS}$	a. $\triangle BPW \cong \triangle RSQ$	b. SSS
3. $\overline{CY} \cong \overline{RP}, \overline{EY} \cong \overline{BP}, \angle Y \cong \angle P$	a.	b.
4. $\overline{BC} \cong \overline{JK}, \overline{BA} \cong \overline{JM}, \angle B \cong \angle J$	a.	b.
5. $\overline{DF} \cong \overline{XZ}, \overline{FY} \cong \overline{ZW}, \angle F \cong \angle Z$	a.	b.
6. $\overline{WV} \cong \overline{AP}, \overline{VZ} \cong \overline{PC}, \overline{WZ} \cong \overline{AC}$	a.	b.

5.4 Parallelism Preserved and Protected

A Develop Understanding Task

In a previous task, *How Do You Know That*, you were asked to explain how you knew that this figure, which was formed by rotating a triangle about the midpoint of one of its sides, was a parallelogram.



You may have found it difficult to explain how you knew that sides of the original triangle and its rotated image were parallel to each other except to say, "It just has to be so." There are always some statements we have to accept as true in order to convince ourselves that other things are true. We try to keep this list of statements as small as possible, and as intuitively obvious as possible. For example, in our work with transformations we have agreed that distance and angle measures are preserved by rigid motion transformations since our experience with these transformations suggest that sliding, flipping and turning figures do not distort the images in any way. Likewise, parallelism within a figure is preserved by rigid motion transformations: for example, if we reflect a parallelogram the image is still a parallelogram—the opposite sides of the new quadrilateral are still parallel.

Mathematicians call statements that we accept as true without proof *postulates*. Statements that are supported by justification and proof are called *theorems*.

Knowing that lines or line segments in a diagram are parallel is often a good place from which to start a chain of reasoning. Almost all descriptions of geometry include a *parallel postulate* among the list of statements that are accepted as true. In this task we develop some parallel postulates for rigid motion transformations.

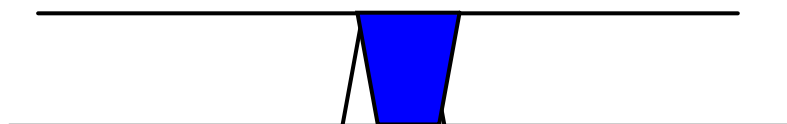
Translations

Under what conditions are the corresponding line segments in an image and its pre-image parallel after a translation? That is, which word best completes this statement?

After a translation, corresponding line segments in an image and its pre-image are [never, sometimes, always] parallel.

Give reasons for your answer. If you choose "sometimes", be very clear in your explanation how to tell when the corresponding line segments before and after the translation are parallel and when they are not.

Translating the figure ^{only} L or R does not result in parallel lines; the corresponding sides are a part of the same line. Translating any other direction gives us parallel lines.



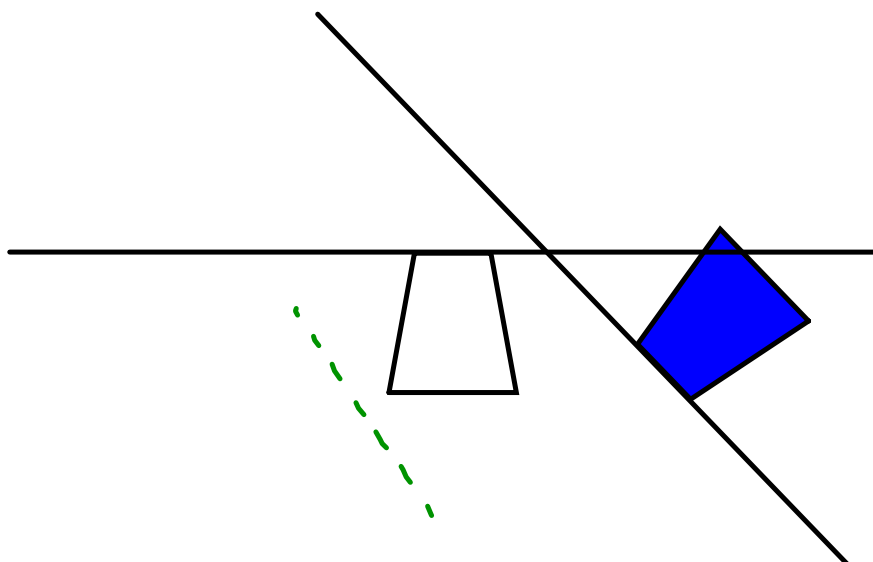
Rotations

Under what conditions are the corresponding line segments in an image and its pre-image parallel after a rotation? That is, which word best completes this statement?

After a rotation, corresponding line segments in an image and its pre-image are [never, sometimes, always] parallel.

Give reasons for your answer. If you choose "sometimes", be very clear in your explanation how to tell when the corresponding line segments before and after the rotation are parallel and when they are not.

Only parallel when rotated 180° .



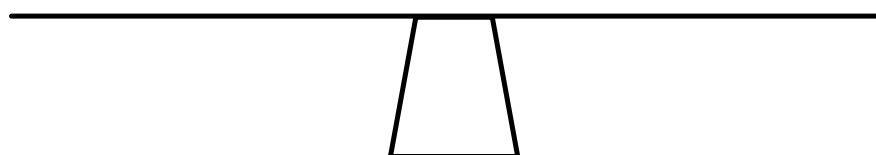
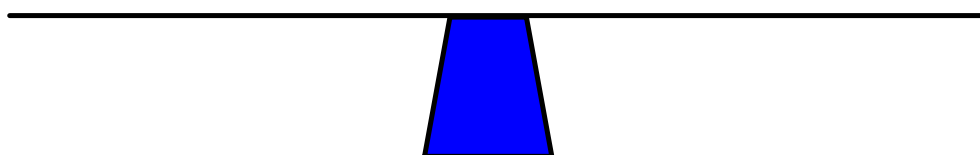
Reflections

Under what conditions are the corresponding line segments in an image and its pre-image parallel after a reflection? That is, which word best completes this statement?

After a reflection, corresponding line segments in an image and its pre-image are [never, sometimes, always] parallel.

Give reasons for your answer. If you choose "sometimes" be very clear in your explanation how to tell when the corresponding line segments before and after the reflection are parallel and when they are not.

Only parallel if reflected upside down.



Homework

Finish 5.4 "Ready, Set, Go"