

GEOMETRY

Week Two

Review of Chapters 3 and 4: Reasoning and Proofs, Perpendicular and Parallel Lines.

California Core Standard - G-SRT: Similarity, Right Triangles, and Trigonometry

Define trigonometric ratios and solve problems involving right triangles.

6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
7. Explain and use the relationship between the sine and cosine of complementary angles.
8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Objectives: Chapter 3 – Inductive and deductive reasoning, conditional statements, property of equality and congruence. Chapter 4 – Identify parallel and perpendicular lines, perpendicular bisector, identify angle pairs formed when parallel lines are cut by transversal.

Monday Page 13 #s 1-7 and Page 14 #s 1-7

Tuesday Page 15 and Page 16 #s 1-5

Wednesday Page 17 #s 1-4 and Page 19 #s 1-8

Thursday Page 20 #s 1-6 and Page 21 #s 1-3

Friday Page 22 #s 1-4 Page 23 # 1-4

GEOMETRY

Week Three

Review of Chapters 5 and 6: Triangles and Right Triangles.

California Core Standard - G-SRT: Similarity, Right Triangles, and Trigonometry

Define trigonometric ratios and solve problems involving right triangles.

6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions

of trigonometric ratios for acute angles.

7. Explain and use the relationship between the sine and cosine of complementary angles.

8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Objectives: Chapter 5 – Classify triangles by angles and sides, find measure of interior angles and exterior angles, use properties of triangles. Chapter 6 – identify parts of a right triangle, Pythagorean Theorem, special triangle relationships.

Monday Page 25 #s 1-6 and Page 26 #s 1-7

Tuesday Page 27 #s 1-8 and Page 28 #s 1-9

Wednesday Page 29 #s 1-6 and Page 32 #s 1-6

Thursday Page 33 #s 1-6 and Page 34 #s 1-6

Friday Page 34 # 1-6

GEOMETRY

Week Four

Review of Chapters 7, 8 and 9: Quadrilaterals and Polygons, Perimeter and Area, and Similar Polygons.

California Core Standard - G-SRT: Similarity, Right Triangles, and Trigonometry

Define trigonometric ratios and solve problems involving right triangles.

6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
7. Explain and use the relationship between the sine and cosine of complementary angles.
8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Objectives: Chapter 7 – Classify polygons by number of sides, recognize a parallelogram, a rectangle, a square, a rhombus, and use properties of parallelograms to find lengths of sides and angle measures.



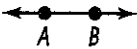

Chapter 8 – Find the perimeter and area of a polygon. Chapter 9 – Write ratios and proportions, identify corresponding parts in similar polygon, use angle-angle similarity postulate, and side splitter theorem.

Monday	Page 37 #s 1-9	and	Page 38 #s 1-12
Tuesday	Page 39 #s 1-10	and	Page 42 #s 1-6
Wednesday	Page 43 #s 1-6	and	Page 44 #s 1-6
Thursday	Page 45 #s 1-5	and	Page 48 #s 1-4
Friday	Page 49 # 1-4	and	Page 50 #s 1-4

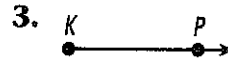
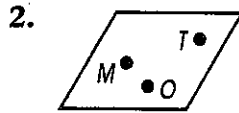
Geometric Figures and Distance Exercise 1

Lessons 1.1 and 1.4

This chart shows the basic geometric figures.

point D	$\bullet D$	plane ABC	
line segment AB		line AB	
ray BA			

Name each figure.



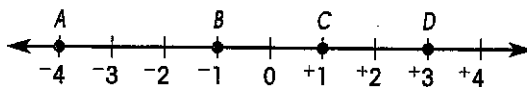
Draw each figure.

4. line AB

5. \overleftrightarrow{MS}

6. plane TRS

Use the number line below for exercises 7–12.



Find the distance between each set of points.

7. Points C and D

8. Points A and B

9. Points A and C

Find the length of each line segment.

10. \overline{AC}

11. \overline{BD}

12. \overline{AD}

CRITICAL THINKING

What does the symbol \overrightarrow{KB} mean? Which point is the endpoint?

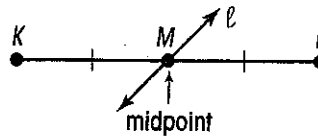
Midpoint of a Line Segment

Exercise 3

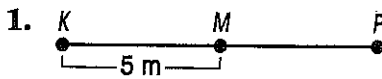
Lesson 1.6

The midpoint of a line segment divides the line segment into two congruent parts.

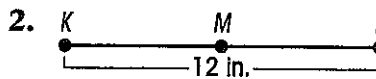
Because M is the midpoint of \overline{KP} , $\overline{KM} \cong \overline{MP}$ and line l is a bisector of \overline{KP} .



Point M is the midpoint of \overline{KP} . Find the length of \overline{MP} in each diagram.

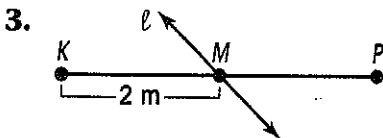


$$MP = \underline{\hspace{2cm}}$$

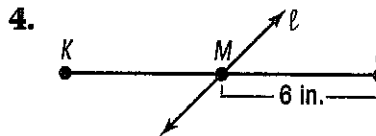


$$MP = \underline{\hspace{2cm}}$$

Line l bisects \overline{KP} at point M . Find the length of \overline{KP} in each diagram.



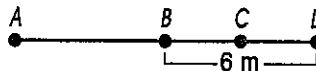
$$KP = \underline{\hspace{2cm}}$$



$$KP = \underline{\hspace{2cm}}$$

Use the diagram below to complete exercises 5–8.

Point C is the midpoint of \overline{BD} .
Point B is the midpoint of \overline{AD} .



5. $BC = \underline{\hspace{2cm}}$

6. $CD = \underline{\hspace{2cm}}$

7. $AB = \underline{\hspace{2cm}}$

8. $AC = \underline{\hspace{2cm}}$

CRITICAL THINKING

A line bisects \overline{GH} at point K . The length of \overline{KH} is 11 m.
Find the length of \overline{GH} . (Hint: Draw a diagram first.)

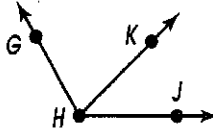
▶ Adding and Subtracting Angle Measures Exercise 7

Lesson 2.4

Adjacent angles are two angles with a common vertex and a common ray.

$\angle GHK$ and $\angle KHJ$ are adjacent angles.

$m\angle GHK + m\angle KHJ = m\angle GHJ$



Draw a diagram. Find the measure of each angle.

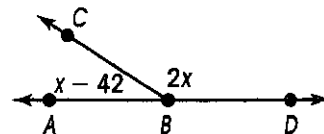
- $\angle ABC$ is adjacent to $\angle CBD$.
 $\angle ABC$ is 90° and $\angle CBD$ is 45° .
 Find the measure of $\angle ABD$.

- $\angle MPQ$ is adjacent to $\angle QPS$.
 $\angle MPQ$ is 23° and $\angle QPS$ is 48° .
 Find the measure of $\angle MPS$.

- $\angle LMK$ is adjacent to $\angle KMP$.
 $\angle LMP$ is 139° and $\angle KMP$ is 67° .
 Find the measure of $\angle LMK$.

CRITICAL THINKING

Look at the diagram on the right. $\angle ABD$ is a straight angle. Write and solve an equation to find the measure of $\angle ABC$ and $\angle CBD$.

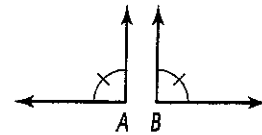


Congruent Angles

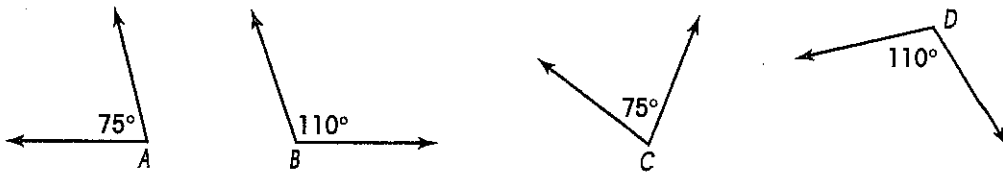
Exercise 9

Lesson 2.6

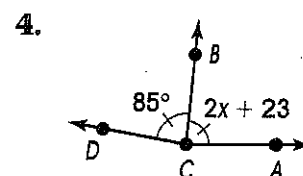
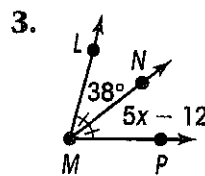
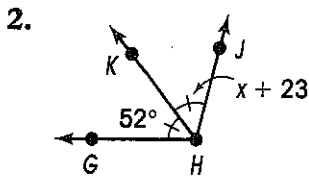
Congruent angles are angles that have the same measure.
 Because $\angle A \cong \angle B$, then $m\angle A = m\angle B$. A small mark on the diagram tells you that the angles are congruent.



1. Which of the following angles are congruent?



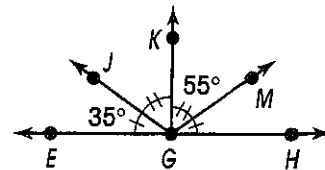
Find the value of x in each diagram.



Use the diagram on the right for exercises 5–8.

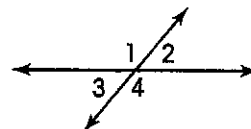
Find the measure of each angle.

5. $\angle JGK$ _____ 6. $\angle MGH$ _____
 7. $\angle EGK$ _____ 8. $\angle HGK$ _____



CRITICAL THINKING

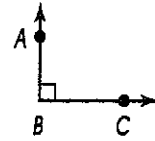
Use the diagram to find the measure of $\angle 4$.
 The measure of $\angle 3$ is 50° . $\angle 3$ and $\angle 4$ are supplementary.



Reasoning**Exercise 13**

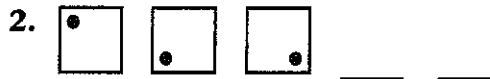
Lessons 3.1, 3.2, and 3.3

- You can use inductive reasoning to continue a pattern.
- The marks on a diagram help you to reach a conclusion.
 $\angle ABC$ is a right angle.
- The *then* part of a statement is the conclusion.
If $\angle ABC$ is a right angle, *then* $m\angle ABC$ is 90.



Continue each pattern.

1. 30, 28, 33, 31, 36, _____, _____

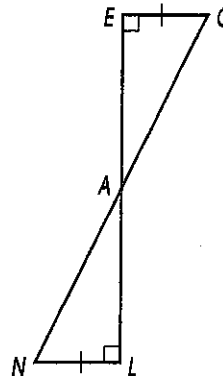


Use the diagram on the right for exercises 3–5.

3. Write a conclusion about
- $\angle CAE$
- and
- $\angle NAL$
- .

4. Write a conclusion about
- CE
- and
- NL
- .

5. Write a conclusion about
- $\angle CEA$
- and
- $\angle NLA$
- .



Write a conclusion for each conditional statement.

6. If two angles are congruent, then _____.

7. If
- \overrightarrow{MR}
- bisects
- $\angle LMN$
- , then _____.

CRITICAL THINKING

Give two possible conclusions for the following conditional statement.

If two adjacent angles combine to form a straight angle, then _____.

Paragraph Proof **Exercise 15**

Lesson 3.6

You can write a proof in paragraph form. Begin with the information you are given. Then, tell how you can reach the statement you wish to prove.

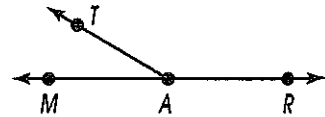
Complete the paragraph proof. Use the terms and symbols below. Each term or symbol is used once.

supplementary, straight, 180, $m\angle MAT$, $m\angle TAR$

You are given:

$\angle MAR$ is a straight angle.

Prove: $\angle MAT$ and $\angle TAR$ are supplementary angles.



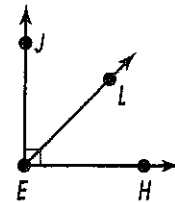
You are given that $\angle MAR$ is a _____ angle.
 This means that $m\angle MAR =$ _____. You know that
 $m\angle MAR = m\angle MAT +$ _____. You can substitute 180 for
 $m\angle MAR$ in this equation. $180 =$ _____ + $m\angle TAR$ This means
 that $\angle MAT$ and $\angle TAR$ are _____ angles.

CRITICAL THINKING

Write a paragraph proof for the following.

You are given: $\angle JEH$ is a right angle.

Prove: $\angle JEL$ and $\angle LEH$ are complementary angles.



Problem-Solving Skill: Indirect Proof **Exercise 17**

Lesson 3.9

To write an indirect proof:

- Assume that the **opposite** of what you want to prove is true.
- Prove that the assumption is false.
- Then, what you want to prove must be true.

Write the opposite of each statement.

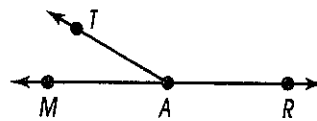
1. $\angle 1$ and $\angle 2$ are vertical angles. _____
2. \vec{JK} bisects $\angle MJN$. _____
3. $\overline{AB} \cong \overline{CD}$ _____
4. Complete the indirect proof.

Use these terms and symbols to complete the indirect proof.
Each term or symbol is used once.

straight, \neq , false, supplementary, are not

You are given:

$\angle MAR$ is a straight angle.



Prove: $\angle MAT$ and $\angle TAR$ are supplementary angles.

Assume: $\angle MAT$ and $\angle TAR$ _____ supplementary angles.

If $\angle MAT$ and $\angle TAR$ are not supplementary angles, then

$m\angle MAT + m\angle TAR$ _____ 180.

This contradicts the given fact that $\angle MAR$ is a _____ angle.

Thus, what you assume is _____.

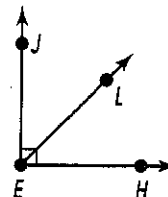
So, you prove that $\angle MAT$ and $\angle TAR$ are _____ angles.

CRITICAL THINKING

Write an indirect proof for the following.

You are given: $\angle JEH$ is a right angle.

Prove: $\angle JEL$ and $\angle LEH$ are complementary angles.



Perpendicular Lines and the Perpendicular Bisector

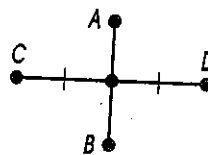
Exercise 19

Lessons 4.1 and 4.2

Lines, line segments, or rays that intersect and form a right angle are perpendicular.

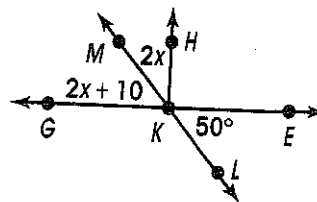
\overline{AB} is the perpendicular bisector of \overline{CD} .

\overline{AB} bisects \overline{CD} and \overline{AB} is perpendicular to \overline{CD} .



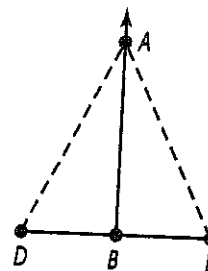
In the diagram, $\overline{HK} \perp \overline{GE}$. Find the measure of each angle.

1. $\angle GKH$ _____
2. $\angle MKG$ _____
3. $\angle MKH$ _____
4. $\angle GKL$ _____



In the diagram, \overline{AB} is the perpendicular bisector of \overline{DE} .

5. Find the value of x if $BD = 3x + 10$ and $BE = x + 40$.
6. Find the value of x if $AD = 40$ and $AE = x + 8$.
7. Find the distance between point A and point E if $AD = 2x - 12$ and $AE = x + 16$.
8. Find the distance between point A and point D if $AD = 3x - 18$ and $AE = x + 12$.

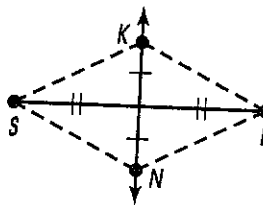


CRITICAL THINKING

In the diagram on the right, $\overline{KN} \perp \overline{SE}$.

$SN = 3x - 27$ and $KE = x + 43$.

Find SK .



Measures of Interior Angles

Exercise 21

Lessons 4.5 and 4.6

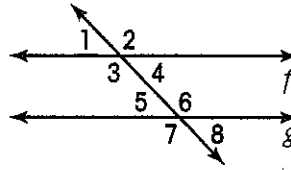
In the diagram, $f \parallel g$.

Alternate interior angles are congruent.

So, $\angle 3 \cong \angle 6$.

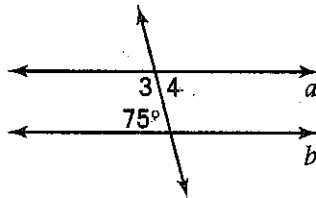
Same-side interior angles are supplementary.

So, $m\angle 3 + m\angle 5 = 180$.



In each diagram, $a \parallel b$. Find the measure of $\angle 3$ and $\angle 4$.

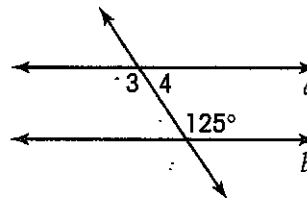
1.



$\angle 3$ is _____.

$\angle 4$ is _____.

2.

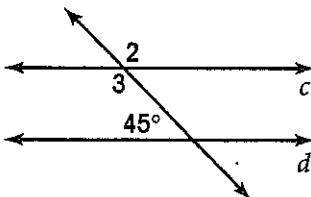


$\angle 3$ is _____.

$\angle 4$ is _____.

In each diagram, $c \parallel d$. Find the measure of $\angle 2$ and $\angle 3$.

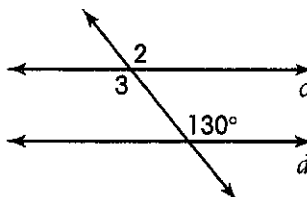
3.



$\angle 2$ is _____.

$\angle 3$ is _____.

4.

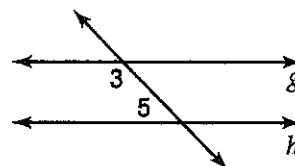


$\angle 2$ is _____.

$\angle 3$ is _____.

CRITICAL THINKING

In the diagram on the right, $g \parallel h$. Find the measure of $\angle 5$ and $\angle 3$ if $\angle 5 = x$ and $\angle 3 = 3x$.

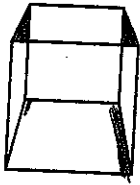


Problem-Solving Skill:
Draw a One-Point Perspective **Exercise 23**

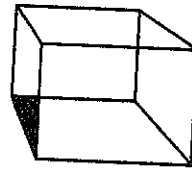
Lesson 4.9

Locate and draw the vanishing point. Show your work.

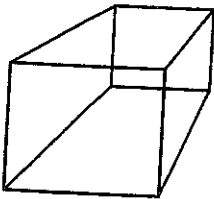
1.



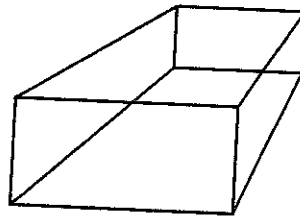
2.



3.

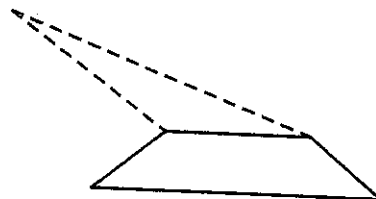


4.



CRITICAL THINKING

Devon began to draw a one-point perspective of a three-dimensional object. Complete his drawing.



Angles of a Triangle Exercise 25

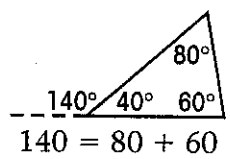
Lessons 5.1, 5.2, and 5.3

You can classify triangles by their angles.

- Acute Triangle All angles are less than 90° .
- Obtuse Triangle One angle is greater than 90° .
- Equiangular Triangle All angles are equal.

Remember these theorems about triangles.

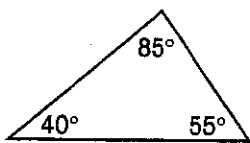
- The sum of the angles in a triangle is 180° .
- The measure of an exterior angle of a triangle equals the sum of the measures of the two remote interior angles.



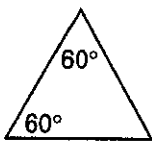
$140 = 80 + 60$

Classify each triangle. Write *acute*, *obtuse*, or *equiangular*.

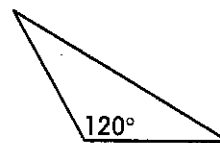
1.



2.

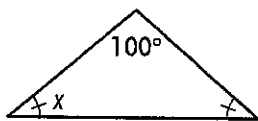


3.

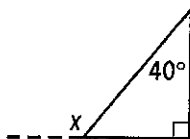


Find the value of x .

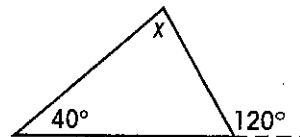
4.



5.



6.



CRITICAL THINKING

The exterior angle of a triangle has a measure of 67° . What are the measures of the two remote interior angles? There is more than one possible answer. (Hint: Draw a diagram.)

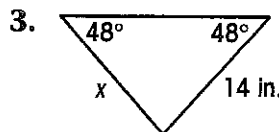
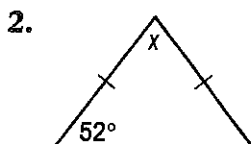
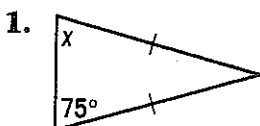
Side-Angle Relationship Exercise 27

Lessons 5.6 and 5.7

Remember these theorems about triangles.

- **Isosceles Triangle Theorem**
If two sides of a triangle are congruent, then the angles opposite those sides are also congruent.
- **Opposite Side-Angle Theorem**
The longest side of a triangle is opposite the largest angle.

Find the value of x .

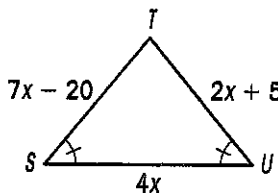


Find the length of each side of $\triangle STU$.

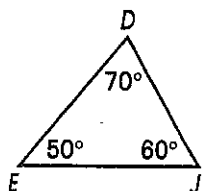
4. \overline{ST} _____

5. \overline{TU} _____

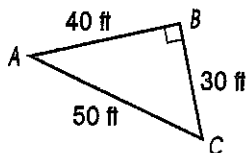
6. \overline{SU} _____



7. Name the longest side.

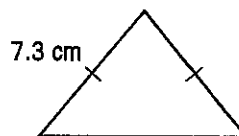


8. Name the largest angle.



CRITICAL THINKING


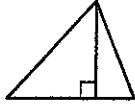

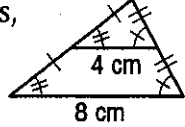
What is the largest possible integer length for the base of this triangle?



Medians, Altitudes, and Bisectors Exercise 29

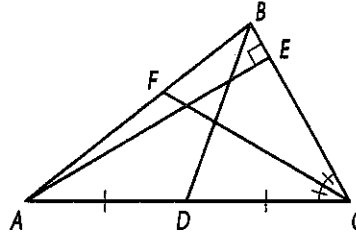
Lessons 5.11 and 5.12

Remember the special line segments in a triangle.

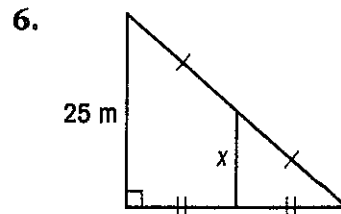
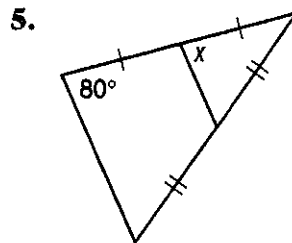
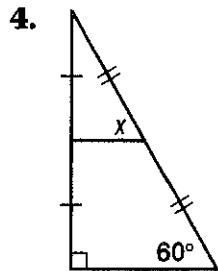
- median Joins a vertex to the midpoint of the opposite side 
- altitude Joins a vertex to the line containing the opposite side and is perpendicular to that side 
- angle bisector Joins a vertex to the opposite side and bisects the angle 
- midsegment Joins the midpoints of any two sides, is parallel to the third side, and is half its length 

Use $\triangle ABC$ to name a line segment for each term.

1. median _____
2. altitude _____
3. angle bisector _____



Find the value of x in each triangle.



CRITICAL THINKING

Draw a right triangle. Find and label the three altitudes.

Special Right Triangle: 45°-45°-90° Exercise 33

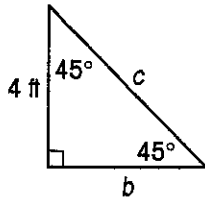
Lesson 6.6

If you know the length of one side of a 45°-45°-90° right triangle, you can find the lengths of the other two sides.

leg = leg
 hypotenuse = leg • $\sqrt{2}$

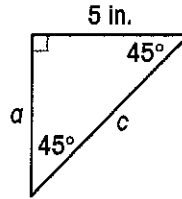
Find the unknown lengths of the sides of each triangle. The first one is done for you.

1.



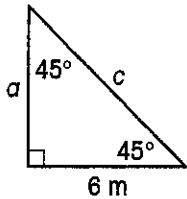
$b = 4 \text{ ft}$
 $c = 4 \cdot \sqrt{2} = 4\sqrt{2} \text{ ft}$

2.



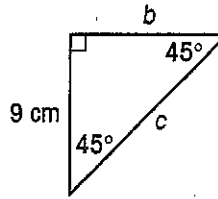
$a = \underline{\hspace{2cm}}$
 $c = \underline{\hspace{2cm}}$

3.



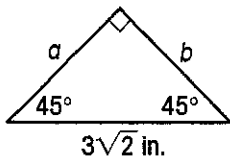
$a = \underline{\hspace{2cm}}$
 $c = \underline{\hspace{2cm}}$

4.



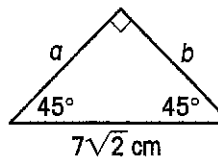
$b = \underline{\hspace{2cm}}$
 $c = \underline{\hspace{2cm}}$

5.



$a = \underline{\hspace{2cm}}$
 $b = \underline{\hspace{2cm}}$

6.



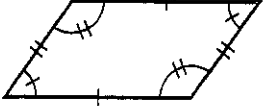
$a = \underline{\hspace{2cm}}$
 $b = \underline{\hspace{2cm}}$

CRITICAL THINKING

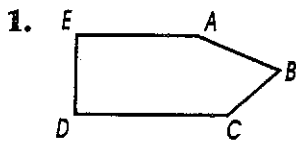
The leg of a 45°-45°-90° right triangle is $3\sqrt{2}$ in. long. Find the length of the hypotenuse.

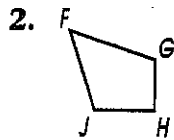
Polygons and Parallelograms Exercise 37

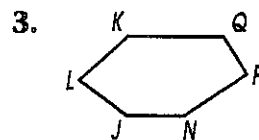
Lessons 7.1 and 7.2

<p>This chart will help you classify polygons.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><i>Polygon</i></th> <th style="text-align: left;"><i>Sides</i></th> </tr> </thead> <tbody> <tr> <td>Triangle</td> <td>3</td> </tr> <tr> <td>Quadrilateral</td> <td>4</td> </tr> <tr> <td>Pentagon</td> <td>5</td> </tr> <tr> <td>Hexagon</td> <td>6</td> </tr> </tbody> </table>	<i>Polygon</i>	<i>Sides</i>	Triangle	3	Quadrilateral	4	Pentagon	5	Hexagon	6	<p>A parallelogram is a quadrilateral with</p> <ul style="list-style-type: none"> • opposite sides parallel • opposite sides congruent • opposite angles congruent • consecutive angles supplementary <div style="text-align: center;">  </div>
<i>Polygon</i>	<i>Sides</i>										
Triangle	3										
Quadrilateral	4										
Pentagon	5										
Hexagon	6										

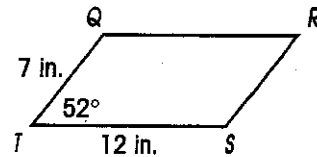
Classify each polygon. Then, name it.







In the diagram, $QRST$ is a parallelogram. Find the length of each side and the measure of each angle.



4. \overline{QR}

5. \overline{RS}

6. $\angle QRS$

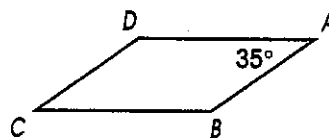
7. \overline{TS}

8. $\angle RST$

9. $\angle RQT$

CRITICAL THINKING

In parallelogram $ABCD$, $\angle A$ is 35° . What is the measure of $\angle B$, $\angle C$, and $\angle D$?

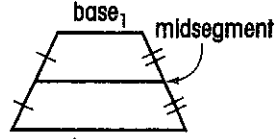


Trapezoids Exercise 39

Lessons 7.5 and 7.6

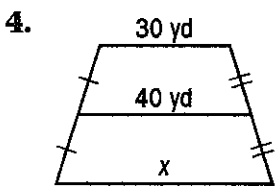
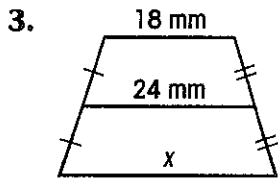
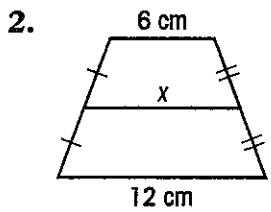
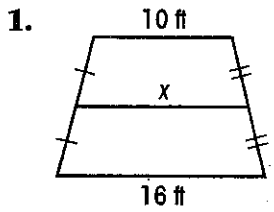
A trapezoid is a quadrilateral with only one pair of parallel sides.

An isosceles trapezoid has congruent legs. Each pair of base angles is congruent.



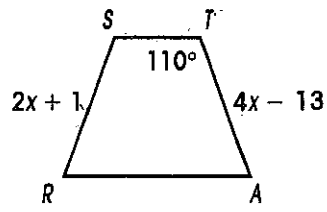
$$\text{midsegment} = \frac{1}{2}(b_1 + b_2)$$

Find the value of x in each trapezoid.



Trapezoid $STAR$ is isosceles. Find the length of each side and the measure of each angle.

- | | | |
|---------------|--------------------|--------------------|
| 5. $\angle S$ | 6. \overline{SR} | 7. \overline{TA} |
| 8. $\angle A$ | 9. $\angle R$ | 10. $\angle T$ |



CRITICAL THINKING

Can the two bases of a trapezoid be the same length?
Explain your thinking.

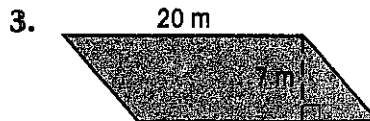
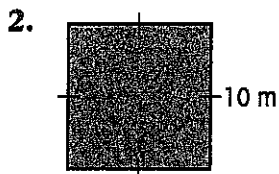
Area of Rectangles, Squares, and Parallelograms Exercise 43

Lessons 8.2 and 8.3

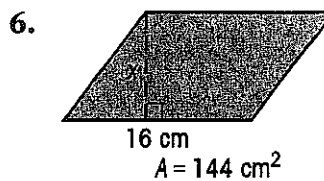
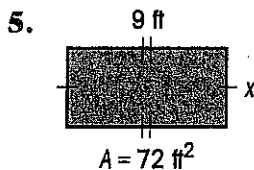
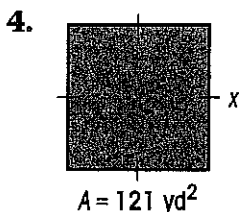
The area of a polygon is the number of square units needed to cover the surface.

These formulas will help you find the area of polygons.	<i>Polygon</i>	<i>Formula</i>
	Rectangle	$A = lw$
	Square	$A = s^2$
	Parallelogram	$A = bh$

Find the area of each figure.

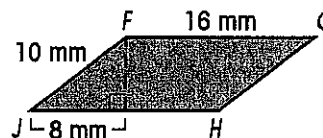


Find the value of x in each figure. The area is given.



CRITICAL THINKING

Find the area of $\square FGHI$. (Hint: Use the Pythagorean Theorem to find the height.)



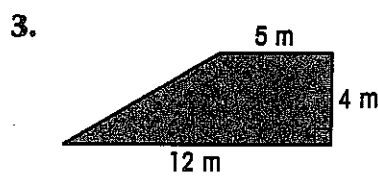
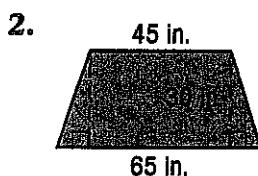
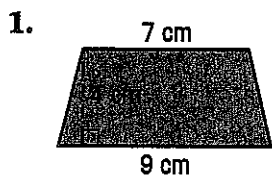
Area of Trapezoids **Exercise 45**

Lesson 8.5

Remember the formula for the area of a trapezoid.

$$A = \frac{1}{2}h (b_1 + b_2)$$

Find the area of each trapezoid.



4. The area of a trapezoid is 140 m^2 . The bases are 18 m and 10 m. Find the height.

5. The area of a trapezoid is 100 cm^2 . The bases are 19 cm and 21 cm. Find the height.

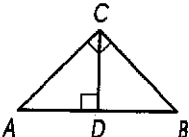
CRITICAL THINKING

A trapezoid has an area of 120 ft^2 and a height of 20 ft. Find the possible pairs of integer bases. (Hint: One possible pair is 10 ft and 2 ft.)

Altitude of a Right Triangle **Exercise 49**

Lesson 9.5

The altitude from the right angle of a right triangle forms three similar triangles.



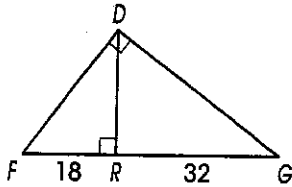
The altitude is the geometric mean between the parts of the base.

$$\triangle ABC \sim \triangle CAD \sim \triangle BCD$$

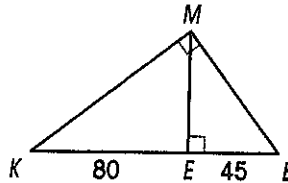
$$\frac{AD}{CD} = \frac{CD}{DB}$$

Find all three unknown lengths in each triangle.

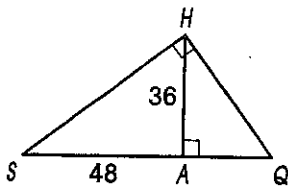
1.



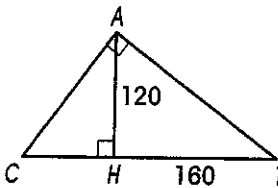
2.



3.

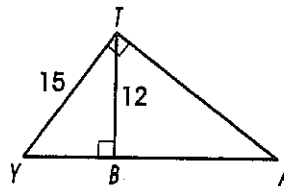


4.



CRITICAL THINKING

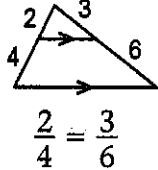
Find all three unknown lengths in the diagram on the right.



Side-Splitter Theorem Exercise 51

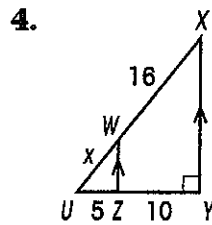
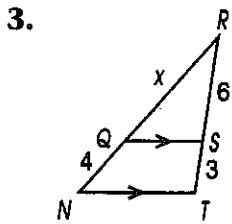
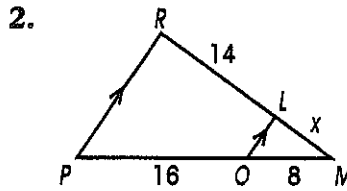
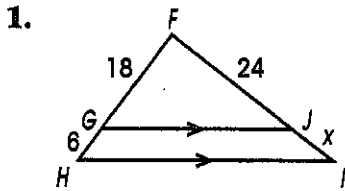
Lesson 9.7

Any line that connects two sides of a triangle and is parallel to the third side divides the two sides proportionally.



$$\frac{2}{4} = \frac{3}{6}$$

Find the value of x in each triangle.



CRITICAL THINKING

Solve for x and y . Explain how you found the value of y .

