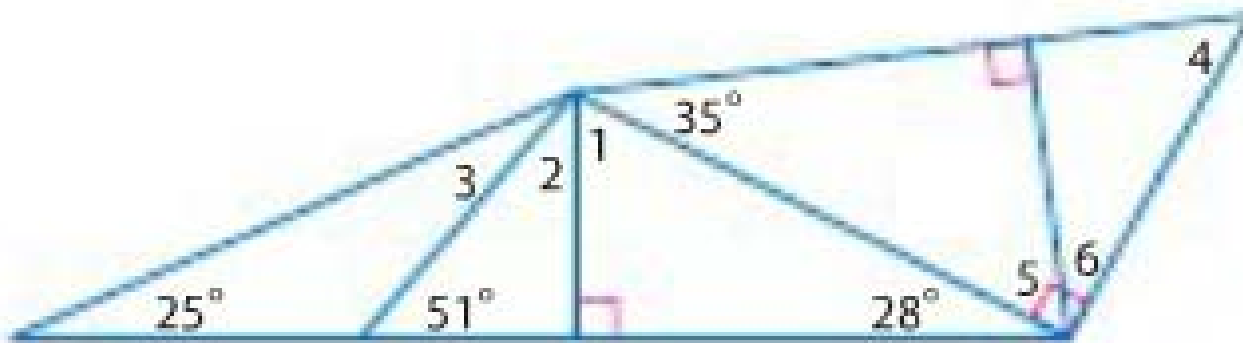


Warm-Up

Take out your HW.

Find each measure.



Fun Fact

The tracks on a roller coaster have triangular reinforcements between the tracks for support and stability. The triangular supports in the photo are isosceles triangles.



Essential Skill 2: Congruent Triangles

LT 2.3 Isosceles and Equilateral
Triangles

A decorative graphic consisting of several horizontal lines of varying lengths and colors (teal, white, and light blue) extending from the right side of the text area towards the right edge of the slide.

Learning Objective

I will be able to . . .

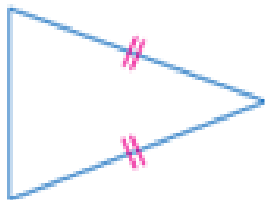
- * Use properties of isosceles triangles.**
- * Use properties of equilateral triangles.**

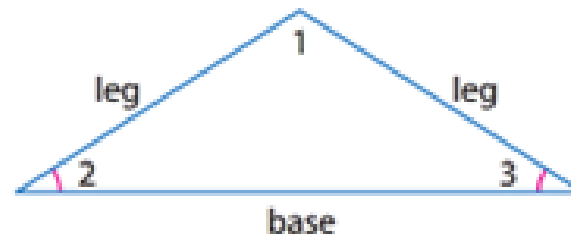
Glossary

LT 2.3 Glossary: Isosceles Triangle

This is an alphabetical list of the key vocabulary terms you will learn.

As you study the learning target, remember to review the vocabulary before the exams.

| Vocabulary Term | Definition/Description/Example | Drawing |
|--------------------|---------------------------------|---|
| Isosceles Triangle | Has at least 2 congruent sides. |  |

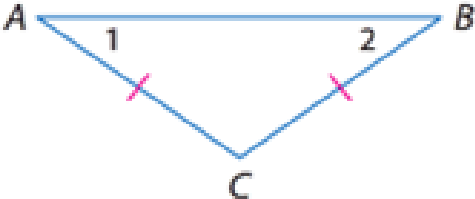
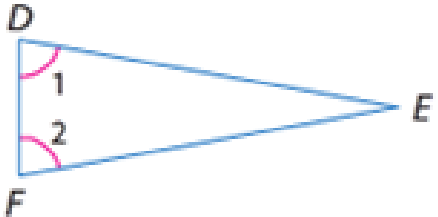


Glossary

LT 2.3 Glossary: Theorems

This is an alphabetical list of the key vocabulary terms you will learn.
As you study the learning target, remember to review the vocabulary before the exams.



| Vocabulary Term | Definition/Description/Example | Drawing |
|--|---|---|
| Isosceles Triangle Theorem | <p>If two sides of a triangle are congruent, then the angles opposite those sides are congruent.</p> <p>Example If $\overline{AC} \cong \overline{BC}$, then $\angle 2 \cong \angle 1$.</p> |  |
| Converse of Isosceles Triangle Theorem | <p>If two angles of a triangle are congruent, then the sides opposite those angles are congruent.</p> <p>Example If $\angle 1 \cong \angle 2$, then $\overline{FE} \cong \overline{DE}$.</p> |  |

Example 1a

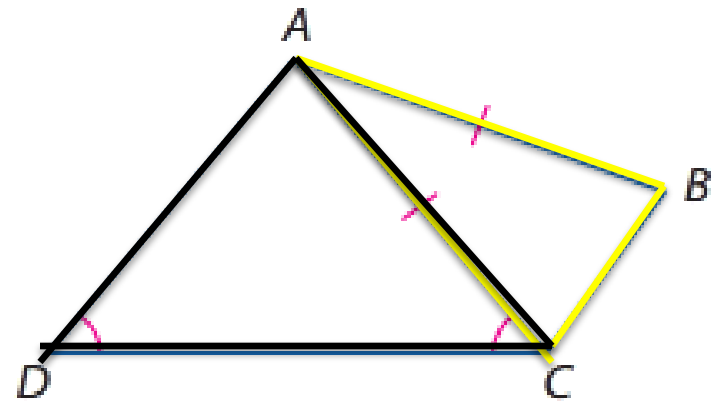
Name two unmarked congruent angles.

Justify your answer.

$\angle ACB$ is opposite AB

$\angle B$ is opposite AC

$\angle ACB \cong \angle B$.



\overline{AD} is opposite $\angle ACD$

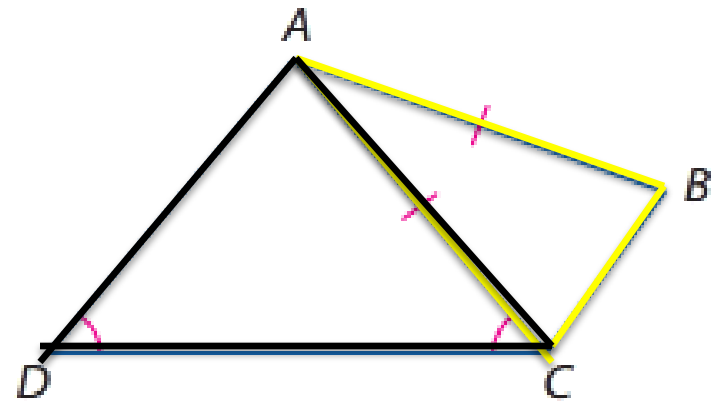
\overline{AC} is opposite $\angle D$.

$\overline{AD} \cong \overline{AC}$.

Example 1b

Name two unmarked congruent segments.

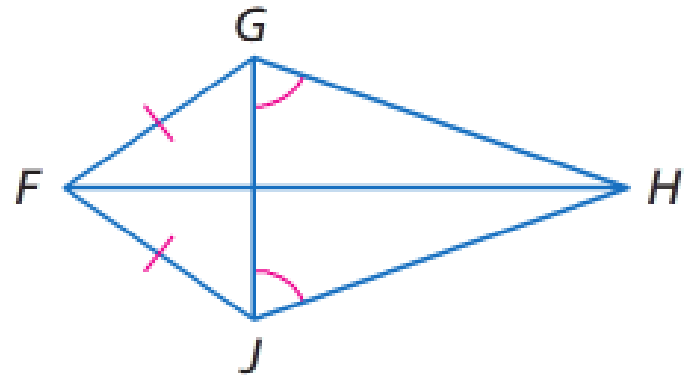
Justify your answer.



Example 1c

Name two unmarked congruent angles.

Justify your answer.



Name two unmarked congruent segments.

Justify your answer.

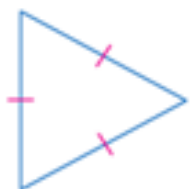
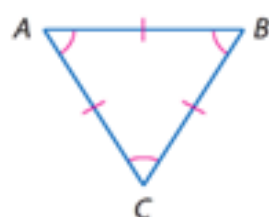
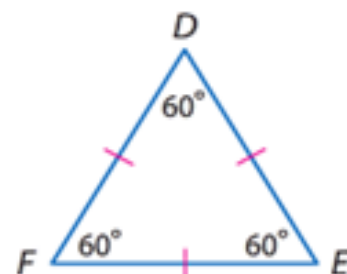
Glossary

LT 2.3 Glossary: Equilateral Triangle

This is an alphabetical list of the key vocabulary terms you will learn.

As you study the learning target, remember to review the vocabulary before the exams.

1

| Vocabulary Term | Definition/Description/Example | Drawing |
|----------------------|---|---|
| Equilateral Triangle | 3 congruent sides |  |
| Corollary 2.3a | A triangle is equilateral if and only if it is equiangular. Example If $\angle A \cong \angle B \cong \angle C$, then $\overline{AB} \cong \overline{BC} \cong \overline{CA}$. |  |
| Corollary 2.3b | Each angle of an equilateral triangle measures 60° . Example If $\overline{DE} \cong \overline{EF} \cong \overline{FE}$, then $m\angle A = m\angle B = m\angle C = 60$. |  |

Example 2a

Find $m\angle Y$

Justify your answer.

Answer:

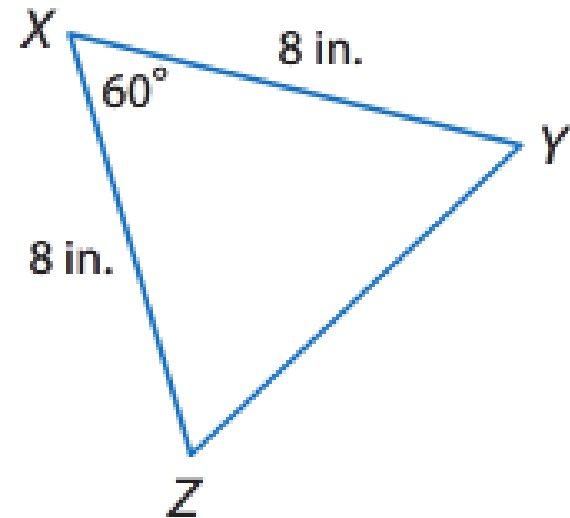
$$m\angle X + m\angle Y + m\angle Z = 180$$

$$60 + m\angle Y + m\angle Y = 180$$

$$60 + 2(m\angle Y) = 180$$

$$2(m\angle Y) = 120$$

$$m\angle Y = 60$$



Triangle Sum Theorem

$$m\angle X = 60, m\angle Z = m\angle Y$$

Simplify.

Subtract 60 from each side.

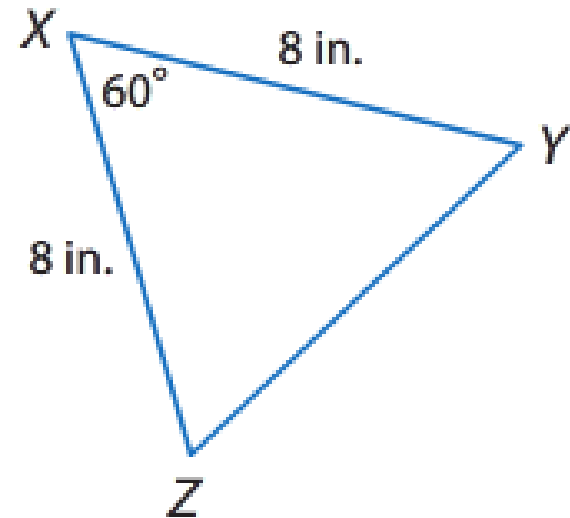
Divide each side by 2.

Example 2b

Find YZ

Justify your answer.

Answer:



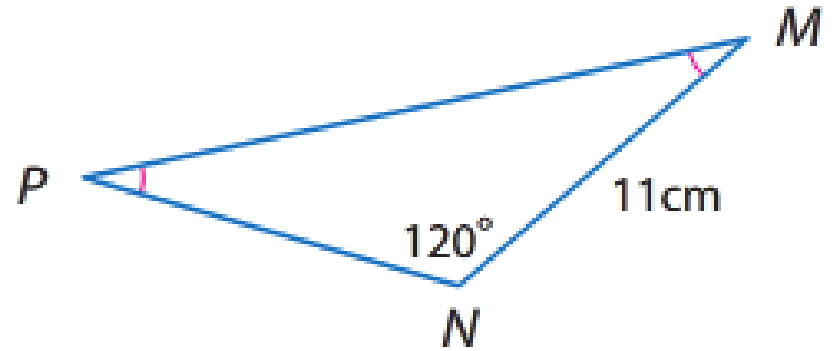
$m\angle Z = m\angle Y$, so $m\angle Z = 60$ by substitution. Since $m\angle X = 60$, all three angles measure 60 , so the triangle is equiangular. Because an equiangular triangle is also equilateral, $XY = XZ = ZY$. Since $XY = 8$ inches, $YZ = 8$ inches by substitution.

Example 2c

Find $m\angle M$

Justify your answer.

Answer:

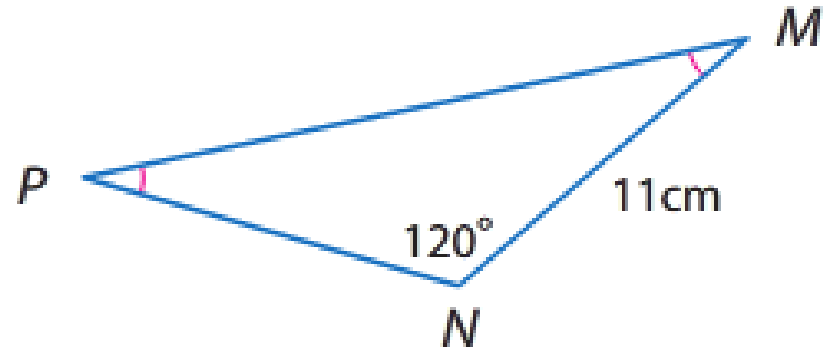


Example 2d

Find PN

Justify your answer.

Answer:



Example 3a

Find the value of each variable.
Justify your answer.

Answer:

$$AB = BC$$

$$3 = 4y - 5$$

$$8 = 4y$$

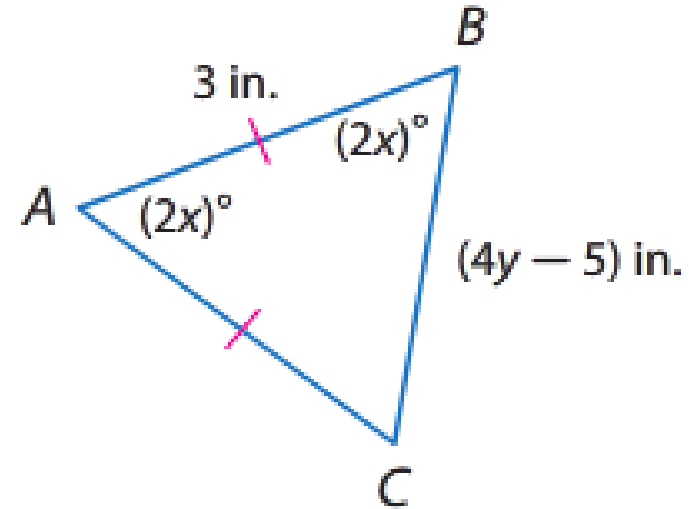
$$2 = y$$

Definition of equilateral triangle

Substitution

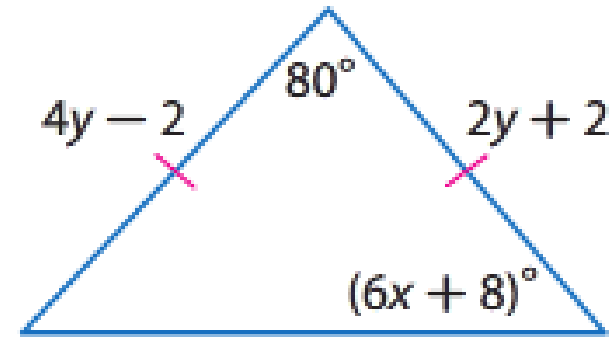
Add 5 to each side.

Divide each side by 4.



Example 3a

Find the value of each variable.
Justify your answer.



Answer:

$$x = 7, y = 2$$

Homework

Class: Complete Skills Practice – #1-8 all

**Honors: Complete Honors Skills Practice
– all except #10**