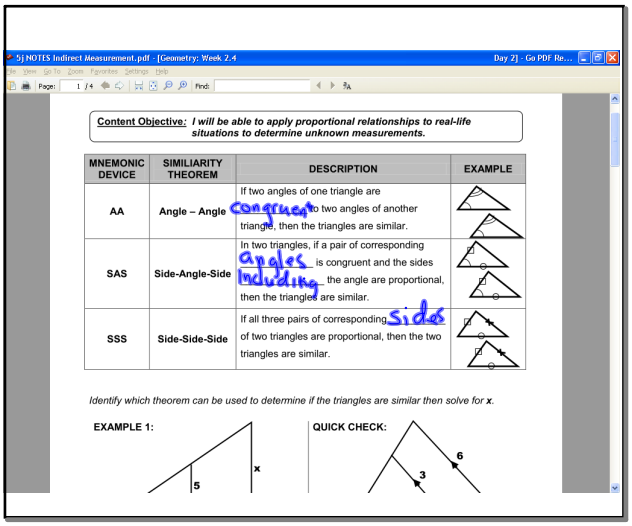

Content Objective: *I will be able to apply proportional relationships to real-life situations to determine unknown measurements.*

MNEMONIC DEVICE	SIMILIARITY THEOREM	DESCRIPTION	EXAMPLE
AA	Angle – Angle	If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.	
SAS	Side-Angle-Side	In two triangles, if a pair of corresponding angles including is congruent and the sides sides the angle are proportional, then the triangles are similar.	
SSS	Side-Side-Side	If all three pairs of corresponding of two triangles are proportional, then the two triangles are similar.	

Identify which theorem can be used to determine if the triangles are similar then solve for ***x****.*

EXAMPLE 1:

QUICK CHECK:

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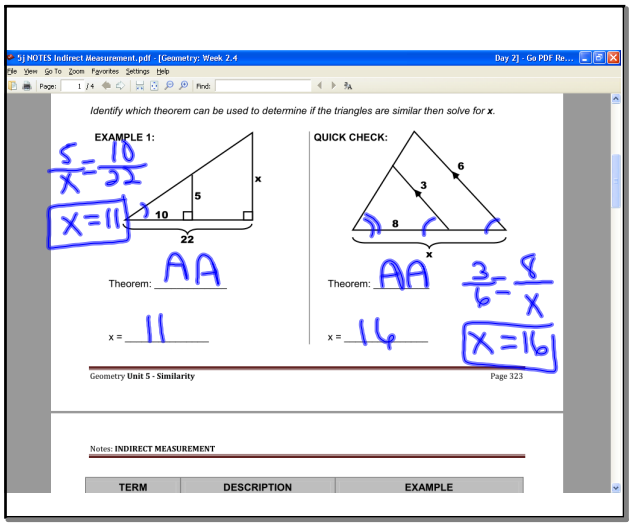

Identify which theorem can be used to determine if the triangles are similar then solve for ***x****.*

EXAMPLE 1: $\frac{5}{x}=\frac{10}{22}$, $x=11$

Theorem: AA

x = 11

QUICK CHECK: $\frac{3}{6}=\frac{8}{x}$, $x=16$

Theorem: AA

x = 16

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Notes: **INDIRECT MEASUREMENT**

TERM	DESCRIPTION	EXAMPLE

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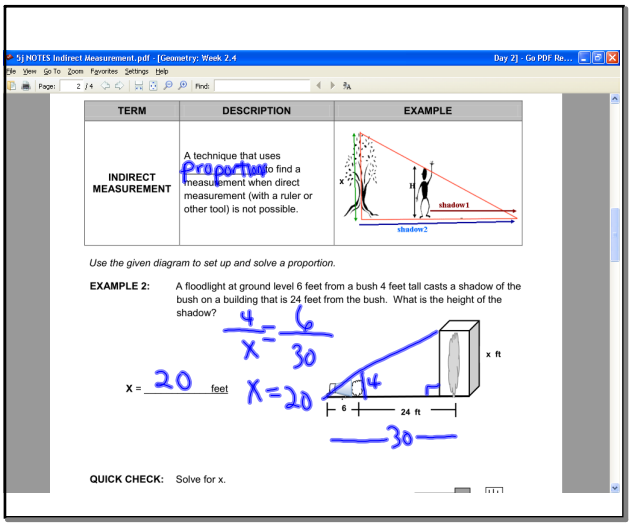

TERM	DESCRIPTION	EXAMPLE
INDIRECT MEASUREMENT	A technique that uses Proportions to find a measurement when direct measurement (with a ruler or other tool) is not possible.	shadow1, shadow2

Use the given diagram to set up and solve a proportion.

EXAMPLE 2: A floodlight at ground level 6 feet from a bush 4 feet tall casts a shadow of the bush on a building that is 24 feet from the bush. What is the height of the shadow?

$\frac{4}{x}=\frac{6}{30}$, $x=20$

x = 20 feet

QUICK CHECK: Solve for x.

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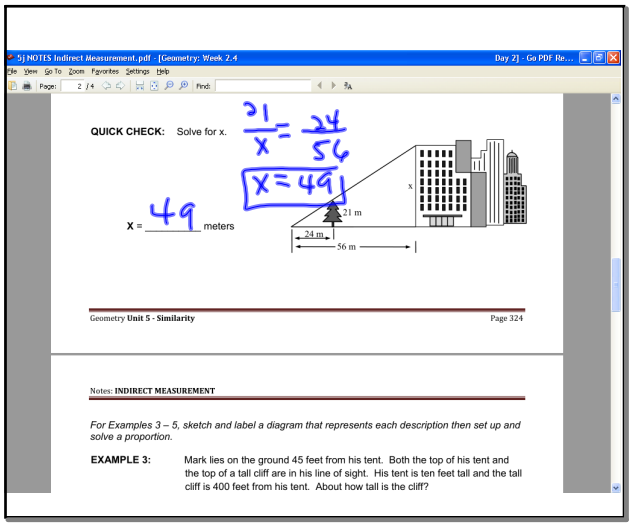

QUICK CHECK: Solve for x. $\frac{21}{x}=\frac{24}{56}$, $x=49$

x = 49 meters

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Notes: **INDIRECT MEASUREMENT**

For Examples 3 – 5, sketch and label a diagram that represents each description then set up and solve a proportion.

EXAMPLE 3: Mark lies on the ground 45 feet from his tent. Both the top of his tent and the top of a tall cliff are in his line of sight. His tent is ten feet tall and the tall cliff is 400 feet from his tent. About how tall is the cliff?

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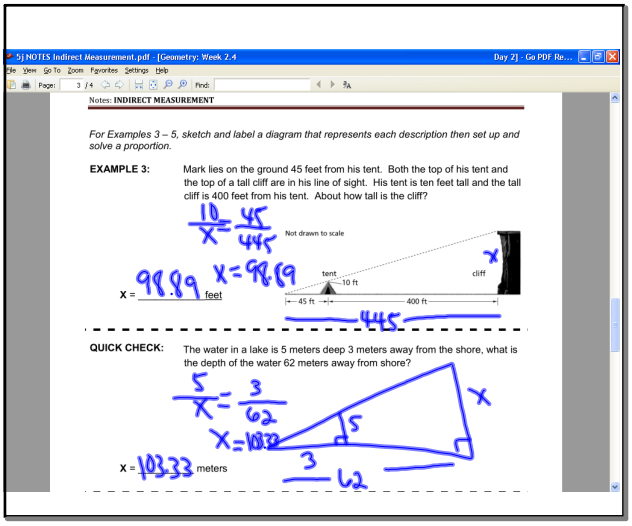

Notes: **INDIRECT MEASUREMENT**

For Examples 3 – 5, sketch and label a diagram that represents each description then set up and solve a proportion.

EXAMPLE 3: Mark lies on the ground 45 feet from his tent. Both the top of his tent and the top of a tall cliff are in his line of sight. His tent is ten feet tall and the tall cliff is 400 feet from his tent. About how tall is the cliff?

$\frac{10}{x}=\frac{45}{445}$, $x=98.89$

X = 98.89 feet

QUICK CHECK: The water in a lake is 5 meters deep 3 meters away from the shore, what is the depth of the water 62 meters away from shore?

$\frac{5}{x}=\frac{3}{62}$, $x=103.33$

X = 103.33 meters

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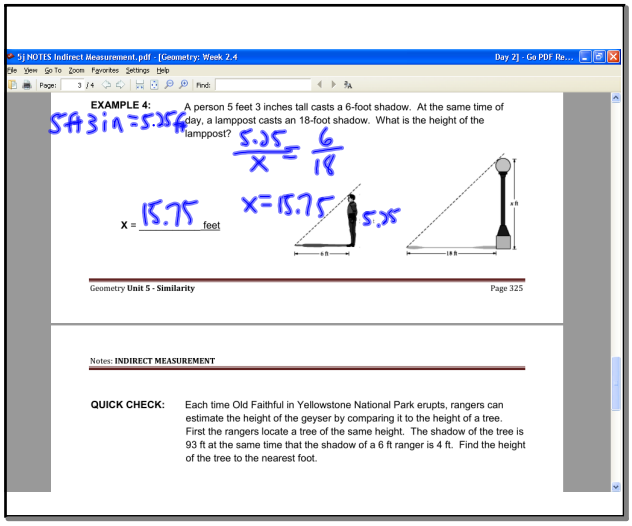

EXAMPLE 4: A person 5 feet 3 inches tall casts a 6-foot shadow. At the same time of day, a lamppost casts an 18-foot shadow. What is the height of the lamppost?

5ft 3in = 5.25ft

$\frac{5.25}{x}=\frac{6}{18}$, $x=15.75$

X = 15.75 feet

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Notes: **INDIRECT MEASUREMENT**

QUICK CHECK: Each time Old Faithful in Yellowstone National Park erupts, rangers can estimate the height of the geyser by comparing it to the height of a tree. First the rangers locate a tree of the same height. The shadow of the tree is 93 ft at the same time that the shadow of a 6 ft ranger is 4 ft. Find the height of the tree to the nearest foot.

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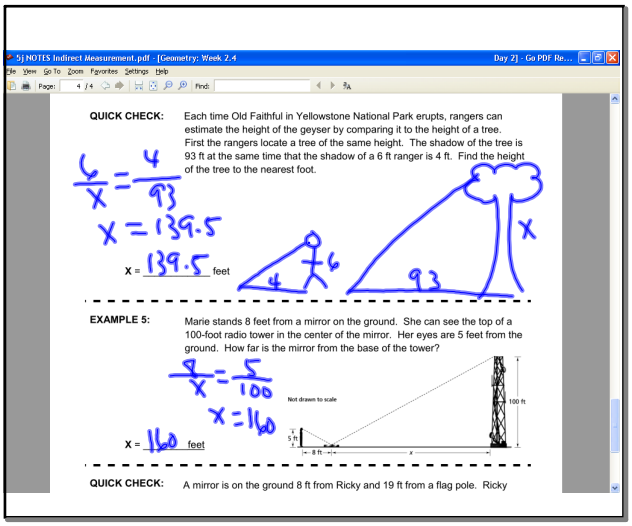

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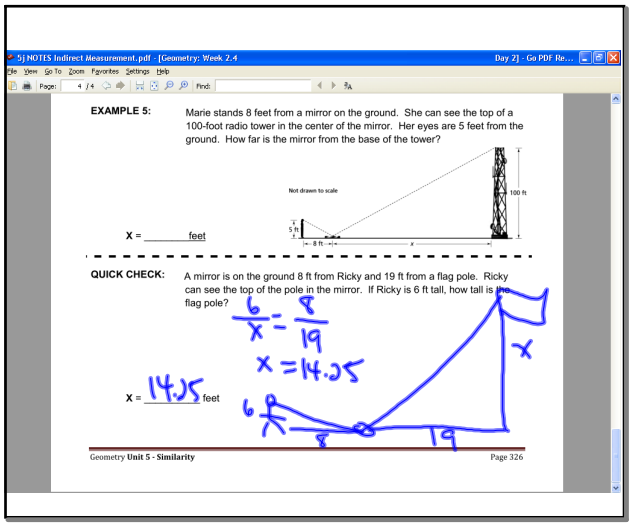

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