Day 11: Review, practice, and quiz

Warm-Up: distance = $d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

1. Prove or disprove that the triangle with vertices R (-2, -2), S (1, 4), and T (4 ,-5) is an equilateral triangle.

Not equilateral only 2 ≅ sides so isosceles

$RS=\sqrt{(-2-1)^2+(-2-4)^2}=\sqrt{(-3)^2+(-6)^2}=\sqrt{45}=3\sqrt{5}$

$ST=\sqrt{(1-4)^2+(4-5)^2}=\sqrt{(-3)^2+9^2}=\sqrt{90}=3\sqrt{10}$

$RT=\sqrt{(4-2)^2+(-5-2)^2}=\sqrt{6^2+(-3)^2}=\sqrt{45}=3\sqrt{5}$

2. ΔABC has vertices A (-4, 1), B (-3, 4), and C (-1, 1). ΔDEF has vertices D (2, -3), E (5, -2), and F (2, 0). Prove or disprove that the two triangles are congruent.

$AB=\sqrt{(-4-3)^2+(1-4)^2}=\sqrt{(-1)^2+(-3)^2}=\sqrt{10}$

$BC=\sqrt{(-3-1)^2+(4-1)^2}=\sqrt{(-2)^2+3^2}=\sqrt{13}$

$AC=\sqrt{(-4-1)^2+(-1-1)^2}=\sqrt{(-3)^2+0^2}=3$

$DE=\sqrt{(2-5)^2+(-3-2)^2}=\sqrt{(-3)^2+(-1)^2}=\sqrt{10}$

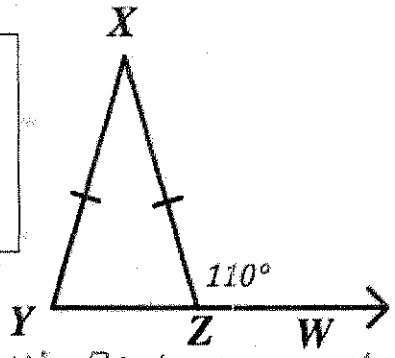
$EF=\sqrt{(5-2)^2+(-2-0)^2}=\sqrt{3^2+(-2)^2}=\sqrt{13}$

$DF=\sqrt{(2-2)^2+(-3-0)^2}=\sqrt{0^2+(-3)^2}=3$

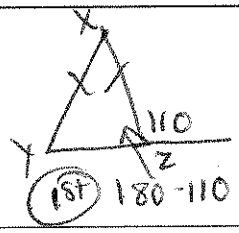
ΔABC ≅ ΔDEF by SSS ≅

3. **Error Analysis** Two students are asked to find the angle measures of ΔXYZ, given that ΔXYZ is isosceles. Their work is shown below. Is either answer incorrect? Explain.

Esteban's Answer	Dashan's Answer
$m\angle Z = 70°$. Since an isosceles triangle has two congruent angles, $m\angle X = m\angle Y$ = 55° not true!	$m\angle XZY = 70$ $m\angle Z = 70°$. Since base angles are congruent, $m\angle Y = 70°$ also. This leaves 40° for $m\angle X$.



Dashan is mostly right... except he should have called m∠Z by m∠XZY or m∠YZX instead



1st 180 - 110 = 70

2nd m∠Y = 70 by ISOS Δ Thm

3rd 180 - 70 - 70 = 40 = m∠X

Lesson - Review and Quiz

Use this space to work out the review questions ☺

on next pages ☺

Quiz Review = Practice

2/11/2014

Quiz Review!

Solve each proportion:

1. $\frac{x-1}{x-3} = \frac{x-2}{x}$

x = 3/2

$x(x-1) = (x-3)(x-2)$

distribute the x

distribute (Hint: use FOIL)

$x^2 - x = x^2 - 2x - 3x + 6$

$x^2 - x = x^2 - 5x + 6$

$-x^2 \quad -x^2$

$-x = -5x + 6$

$+5x \quad +5x$

$\frac{4x}{4} = \frac{6}{4}$ $x = 3/2$ or 1.5

2. $\frac{2m+1}{6} = \frac{4m-2}{4}$

m = 1

$4(2m+1) = 6(4m-2)$

distribute!!

$8m + 4 = 24m - 12$

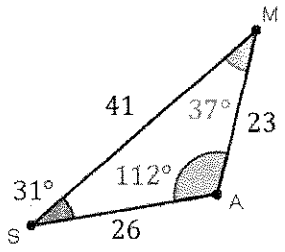
$16 = 16m$

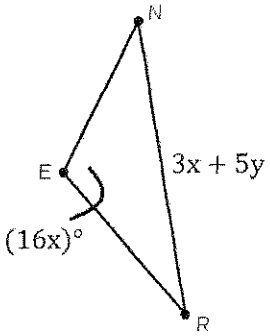
$\frac{16}{16} \quad \frac{16}{16}$

m = 1

Quiz Review!

Given Δ MAS is congruent to Δ NER, solve for x and y.





x = 7

y = 4

$\overline{NR} \cong \overline{MS}$, $\angle E \cong \angle A$

$3x + 5y = 41$

$16x = 112$

$\frac{16}{16} \quad \frac{16}{16}$

x = 7

$3(7) + 5y = 41$

$21 + 5y = 41$

$5y = 20$

y = 4

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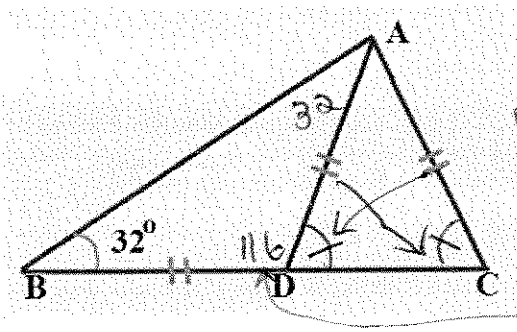
Quiz Review!

Find the measure of Angle C.



$m\angle C = 64°$

1st $m\angle A = 32°$ from Isos $\triangle$ Thm

2nd $32 + 32 + m\angle BDA = 180 \rightarrow m\angle BDA = 116$ from $\triangle$ Sum Theorem

3rd $116 + m\angle ADC = 180$ ∠ linear pair angles are supplementary

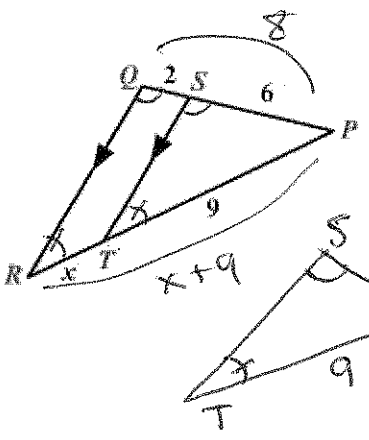
$m\angle ADC = 64$

4th $m\angle ADC = m\angle C$ by Isos $\triangle$ Thm ∴ $m\angle C = 64°$

∴ means "therefore"

Quiz Review!

Solve for the value of x.



★ $\angle Q \cong \angle TSP$; $\angle R \cong \angle STP$ because // lines make corresponding ∠s ≅ ∠s (look for F shape)

$x = 3$ ★ $\triangle QPR \sim \triangle SPT$ by AA~

1st draw small $\triangle$ separately & mark it

2nd set up proportion

$$\frac{\text{full side}}{\text{full side}} = \frac{\text{full side}}{\text{full side}} \qquad \frac{8}{6} = \frac{x+9}{9}$$

$72 = 6(x+9)$

$72 = 6x + 54$

$18 = 6x$

$x = 3$

Quiz Review!

Always, Sometimes, Never

1. If two triangles are similar, then they are congruent

SOMETIMES

only if sides ≅ (not just prop.)

2. If two triangles are congruent, then they are similar

ALWAYS

~ means ∠s ≅ and sides prop.

3. Two right triangles are similar

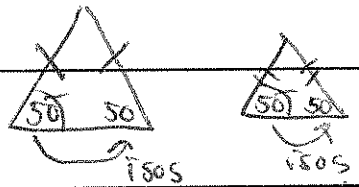
(sides are prop. if ≅; SF = 1)

SOMETIMES

must have ∠s ≅, sides prop. OR AA~ SSS~ SAS~

4. Two isosceles triangles are similar if a base angle of one is congruent to a base angle of another

ALWAYS



isos △ thm isos △ thm

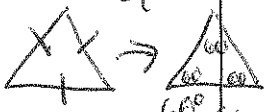
△s ~ by AA~

Quiz Review!

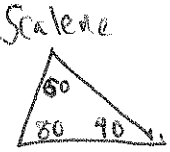
Always, Sometimes, Never

5. An equilateral triangle is similar to a scalene triangle

NEVER



60° ∠s



no ≅ ∠s → no ≅ sides

∠s not ≅ ∴ not ~

6. If two sides of one triangle are proportional to two sides of another triangle, then the triangles are similar

SOMETIMES

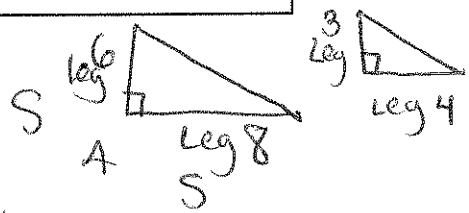
need SAS~ → need included ∠

7. Two right triangles are similar if the legs of one are proportional to the legs of the other

ALWAYS

yes this is SAS

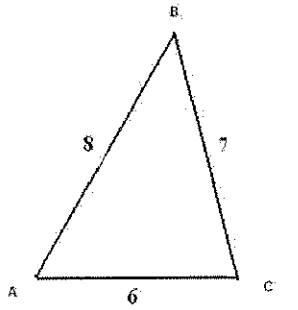
$\frac{6}{3} \overset{\checkmark}{=} \frac{8}{4}$



and included ∠ between legs is a rt ∠, so 1 pair ≅ ∠s

Quiz Review!

Given Δ ABC is similar to Δ PQR, solve for a and b.



$\frac{AB}{BC} = \frac{PQ}{QR}$

$\frac{8}{7} = \frac{6.4}{a}$

$\frac{8a}{8} = \frac{7(6.4)}{8}$

$a =$

a = 5.6

b = 4.6

$\frac{AB}{AC} = \frac{PQ}{PR}$

$\frac{8}{6} = \frac{6.4}{b}$

$\frac{8b}{8} = \frac{6(6.4)}{8}$

$b =$

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Quiz Review!

- Name 4 postulates that prove triangles congruent.

SSS, SAS, ASA, AAS

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