BE - Geometry 1

Tuesday 10-18-11

Find the discriminant of each quadratic equation then state the number and type of solutions.

1. $-x^2 + 4x = 4$
2. $-10m^2 - m - 7 = -4$
3. $-6x^2 - 2x + 3 = -5$

4. What does CPCTC stand for?

① $-x^2 + 4x - 4 = 0$

$a = -1$ $b^2 - 4ac$

$b = 4$ $(4)^2 - 4(-1)(-4)$

$c = -4$ $16 - 16 = 0 = d$

1 real solution

$x = \frac{4 \pm \sqrt{0}}{2(-1)}$

$x = \frac{4}{-2} = -2$

② $-10m^2 - m - 3 = 0$

$a = -10$ $b^2 - 4ac$

$b = -1$ $(-1)^2 - 4(-10)(-3)$

$c = -3$ $1 - 120$

$-119 = d$

No real sol.

Two complex sol.

$\pm\sqrt{-119}$ No real number

$-6x^2 - 2x + 8 = 0$

$a = -6$ $b^2 - 4ac$

$b = -2$ $(-2)^2 - 4(-6)(8)$

$c = 8$ $4 + 192 = 196 = d$

2 real sol.

$x = \frac{+2 + \sqrt{196}}{-12} = \frac{2 \pm 14}{-12}$

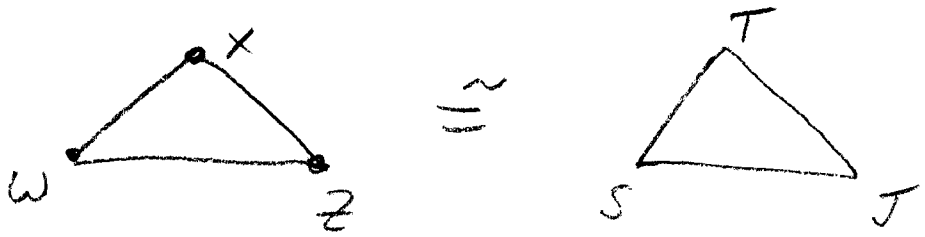
$x = \left\{-\frac{4}{3}, 1\right\}$

Homework Review Pg 195 # 3-5, 9-12

(3) $\triangle AFC \cong \triangle DFB$ F IS COMMON TO BOTH $\triangle$'S

(4) $\triangle HJT \cong \triangle TKH$

(5)



$\therefore \angle W \cong \angle S, \angle X \cong \angle T, \angle Z \cong \angle J$

AND $\overline{WX} \cong \overline{ST}, \overline{XZ} \cong \overline{TJ}, \overline{WZ} \cong \overline{SJ}$

---

(9) $\triangle CFH \cong \triangle JKL$ HOW DO YOU KNOW $\angle F \cong \angle K$?

(10) $\triangle SVR \cong \triangle SVT$

(11) $\triangle WPZ \cong \triangle QVS$

(12) $\triangle HEF \cong \triangle HGF$

WHAT is THE least information you need to know about 2 triangles to prove they are Congruent?

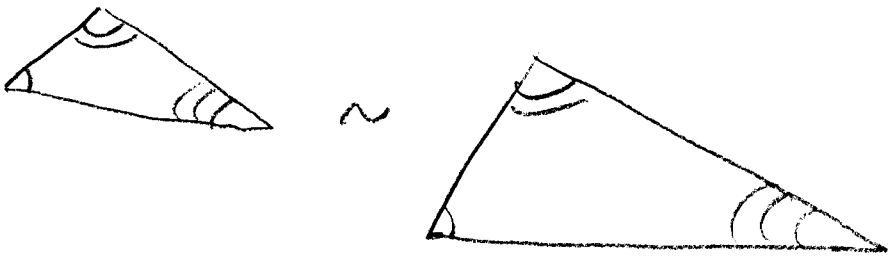
Two sides or Two Angles Are Not Enough

(EX) 

EVEN THOUGH 2 sides are $\cong$, there are clearly many $\triangle$'s that could have these 2 sides

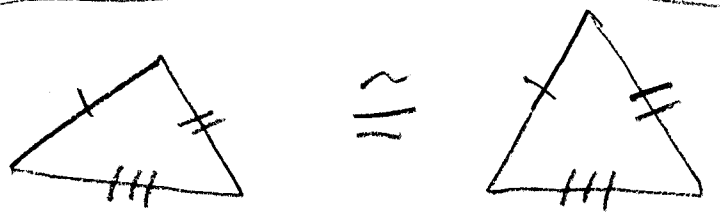
(EX) 

Two angles look pretty good since "2 gets you 3" Why?



BUT there ARE AN INFINITE number of $\triangle$'s with the same 3 $\angle$s that ARE similar (sides ARE in proportion) but NOT Congruent. This is called AAA
Angle, Angle, Angle

WHAT ABOUT OTHER COMBINATIONS INVOLVING COMBINATIONS OF 3 SIDES OR ANGLES?



SSS
SIDE, SIDE, SIDE

Yes, if you can show 3 sides are $\cong$, the $\triangle$'s $\cong$

SAS
SIDE, ANGLE, SIDE

Yes, if 2 sides and the included $\angle$ are $\cong$ the $\triangle$'s are $\cong$

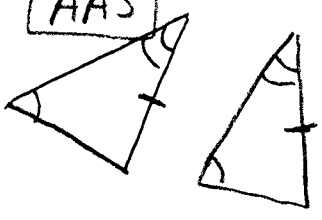
CHAPTER 4-4

CH. 4-5

ASA

Yes, 2 $\angle$s and included side $\cong$, the $\triangle$'s $\cong$

AAS



Yes, 2 $\angle$'s and ONE NON-included side are $\cong$, $\triangle$'s $\cong$

Pg 209

Summary of Conditions Needed To Prove Triangles Congruent

CPCTC

SSS (POSTULATE) — 3 sides of each $\triangle \cong$

SAS (POSTULATE) — 2 sides and included $\angle \cong$

ASA (POSTULATE) — 2 $\angle$s and included side $\cong$

AAS (POSTULATE) — 2 $\angle$s and non-included sides

same since 2 angles gets you 3!

Not Enough Information to prove Congruence

AAA — if 3 $\angle$s are $\cong$, $\triangle$'s are similar, not necessarily congruent. (their sides are in proportion)

* **SSA** — there may no, one, or two $\triangle$'s that meet these conditions — we'll deal with this when we learn the Law of Cosines.

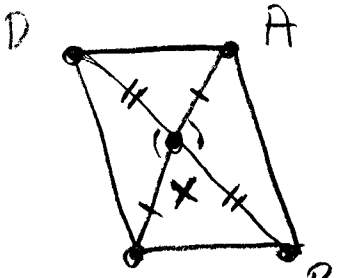
* WARNING TO IMMATURE TEENS

Ex 3 Pg 202

GIVEN:

X is midpoint of $\overline{BD}$

X is midpoint of $\overline{AC}$

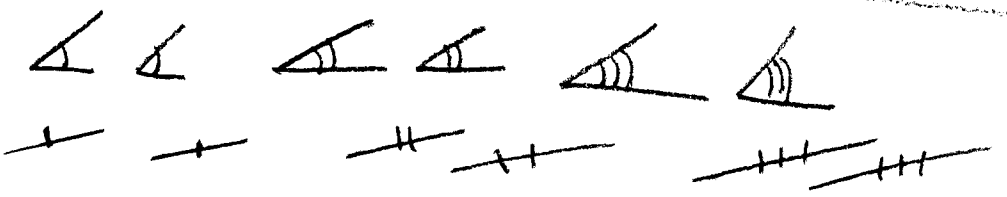


Prove: $\triangle DXC \cong \triangle BXA$

STATEMENT	JUSTIFICATION
$\overline{CX} \cong \overline{XA}$	Def. of midpoint. Given.
$\overline{DX} \cong \overline{XB}$	Def of midpoint. Given.
$\angle DXC \cong \angle AXB$	Vert. $\angle$s are $\cong$
$\triangle DXC \cong \triangle AXB$	SAS

What else do you know about $\square ABCD$?

Hint: CPCTC

NOTE: 

ANGLE AND SIDE CONGRUENCY MARKS

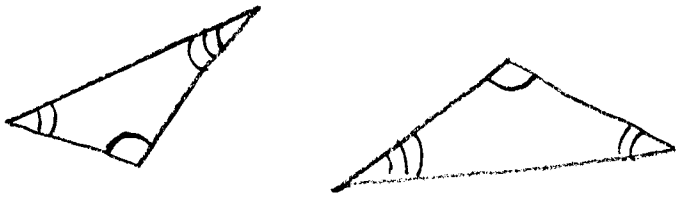
Ex 4 Pg. 203 — Identify $\cong$ $\triangle$'s

Determine which postulate can be used to prove $\triangle$'s $\cong$, if possible.

(A)

Each corresponding side is $\cong$, $\therefore$ [SSS] $\triangle$'s are $\cong$

(B)



AAA $\therefore$ $\triangle$'s are similar, NOT $\cong$

(Ex)

2 sides and included $\angle$ are $\cong$,
$\therefore$ [SAS] $\triangle$'s $\cong$

Homework: Pg 203 #6, 7, 8,
Pg 205 # 21-25

TIP: Extend lines, think of properties already proved