HW #1 - due Fri 11/6
- Read Ch 1
- Ch 1 Review Problems pp. 36-38 #1-30

Quiz #1 - Thur, 11/12
- Vocab
- Fill in the blank proofs

HW #2 - due Fri, 11/13
- Read Ch 2
- **Ch 2 Review Problems pp. 71-74 #1-19, 31-49**

HW #3 - due Wed, 11/18
- Read Ch 3
- **Ch 3 Review Problems pp. 124-128 #17-31, 34-49**

Test #1 - Thur, 11/19

3.5 – Complementary and Supplementary Angles

Def: Two angles are complementary iff their sum is 90°.

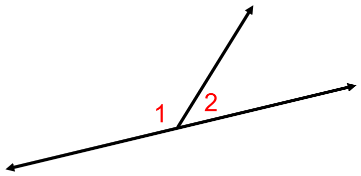
Def: Two angles are supplementary iff their sum is 180°.

Theorem 3: Complements of the same angle are equal. (proved on p.106)

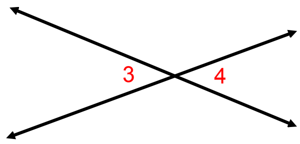
Theorem 4: Supplements of the same angle are equal.

3.6 – Linear Pairs and Vertical Angles

Def: Two angles are a linear pair iff they have a common side and their other sides are opposite rays.



Def: Two angles are vertical angles iff the sides of one angle are opposite rays to the sides of the other.

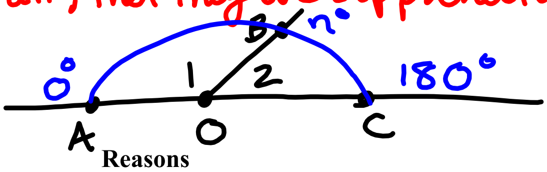


Theorem 5: The angles in a linear pair are supplementary.

If 2 angles are a linear pair, then they are supplementary.

Given: ∠1 and ∠2 are a linear pair.

Prove: ∠1 and ∠2 are supplementary.



Proof:

Statements	**Reasons**
1. ∠1 and ∠2 are a linear pair.	Given
2. Rays OA and OC are opposite rays.	If two angles are a linear pair, they have a common side and their other sides are opposite rays.
3. Let the coordinates of OA, OB, and OC be 0, n, and 180.	Protractor postulate
4. ∠1=n-0=n° and ∠2=(180-n)°	Protractor postulate
5. ∠1+∠2= n°+(180-n)°= 180°	Addition
6. ∠1 and ∠2 are supplementary.	Two angles are supplementary if their sum is 180°.

Theorem 6: Vertical angles are equal.

3.7 – Perpendicular and Parallel Lines

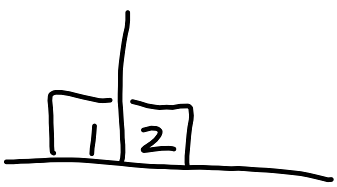
Def: Two lines are perpendicular iff they form a right angle.

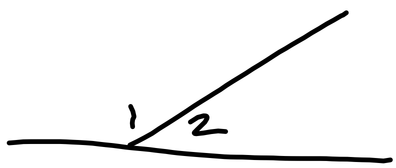
Theorem 7: Perpendicular lines form four right angles.

Corollary to the definition of a right angle: All right angles are equal.

Theorem 8: If the angles in a linear pair are equal, then their sides are perpendicular.

Def: Two lines are parallel iff they lie in the same plane and do not intersect.



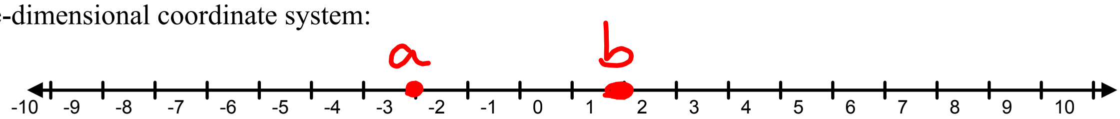


Chapter 4 – Congruence

4.1 – Coordinates & Distance

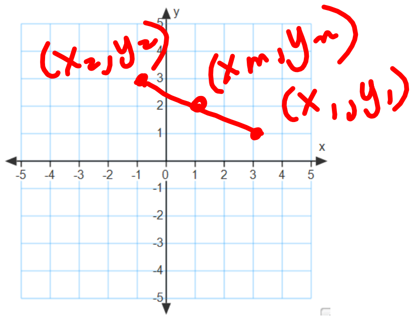
$d(a,b) = |b-a| = |a-b| \approx 1-(-3) = 4$

one-dimensional coordinate system:



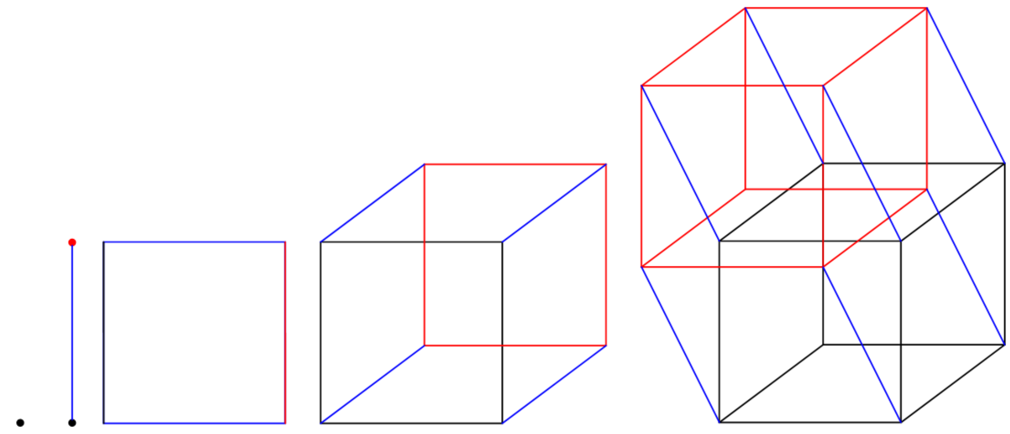
two-dimensional coordinate system:

Origin, axes, quadrants, coordinates



Distance formula:
The distance between the points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

midpoint : $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

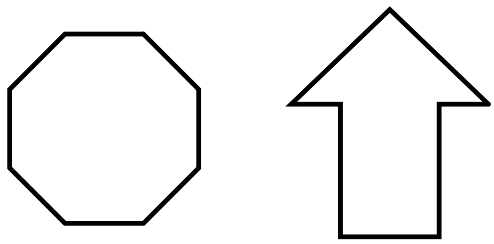


4.2 – Polygons and Congruence

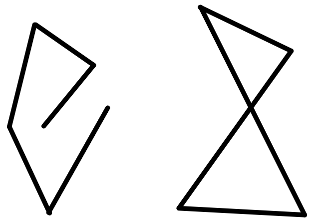
Def: A polygon is a connected set of at least three line segments in the same plane such that each segment intersects exactly two others, one at each endpoint.

The line segments are the sides of the polygon, and the endpoints are its vertices. The number of sides and vertices is always the same, and the polygon is referred to as an "*n*-gon" if it has *n* sides and *n* vertices.

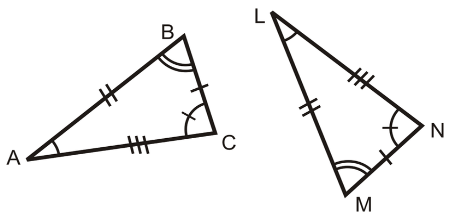
Polygons:



Not Polygons:



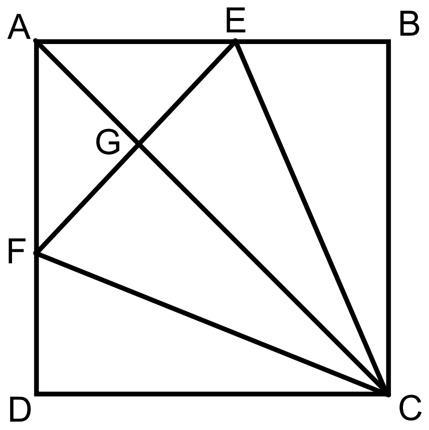
Def: Two triangles are congruent iff there is a correspondence between their vertices such that all of their corresponding sides and angles are equal.



$\Delta ABC \cong \Delta LMN$

$\cong$ means "is congruent to"

$ABC \leftrightarrow LMN$



Name the triangles that appear to be congruent to the following triangles.

12. ΔAFG $\cong \Delta AEG$

13. ΔACD $\cong \Delta ACB$

14. ΔCDF $\cong \Delta CBE$

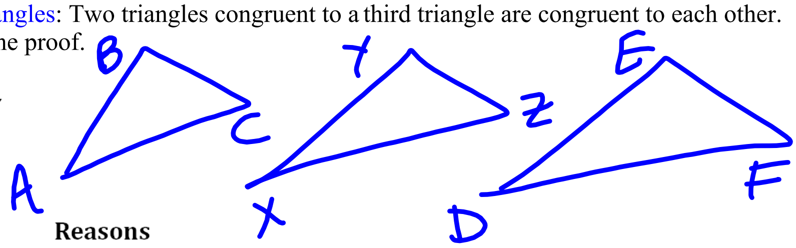
15. ΔACE $\cong \Delta ACF$

16. Name a triangle that is not congruent to any other triangle in the figure.

ΔCFE ; ΔAFE

Corollary to the definition of congruent triangles: Two triangles congruent to a third triangle are congruent to each other.

55. Give the reasons for the statements in the proof.



Given: $\Delta ABC \cong \Delta XYZ$ and $\Delta DEF \cong \Delta XYZ$

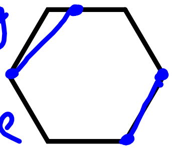
Prove: $\Delta ABC \cong \Delta DEF$

Proof:

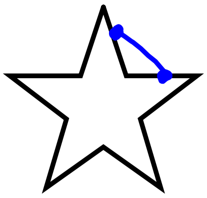
Statements	**Reasons**
1. $\Delta ABC \cong \Delta XYZ$ and $\Delta DEF \cong \Delta XYZ$	Given
2. $\angle A = \angle X,\ \angle B = \angle Y, \angle C = \angle Z$ $AB = XY, BC = YZ, AC = XZ$ $\angle D = \angle X,\ \angle E = \angle Y, \angle F = \angle Z$ $DE = XY, EF = YZ, DF = XZ$	Def. of congruent triangles
3. $\angle A = \angle D,\ \angle B = \angle E, \angle C = \angle F$ $AB = DE, BC = EF, AC = DF$	Substitution (all the things in #2)
4. $\Delta ABC \cong \Delta DEF$	Def. of Congruent Δ's

Convex

line segments connecting points lie inside polygon



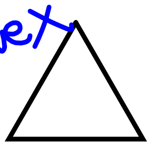
Concave



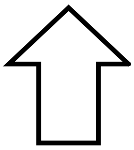
some connecting line segments lie outside the polygon

Convex or concave?

convex

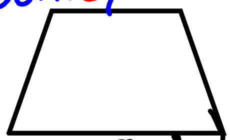


concave



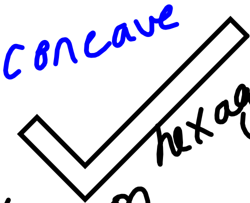
7-gon

convex



trapezoid

concave



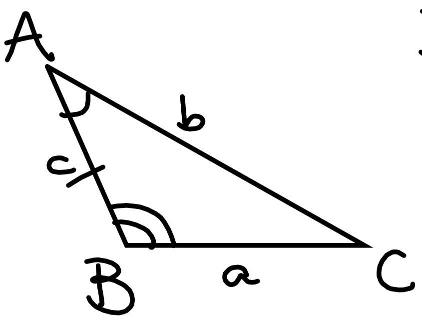
hexagon

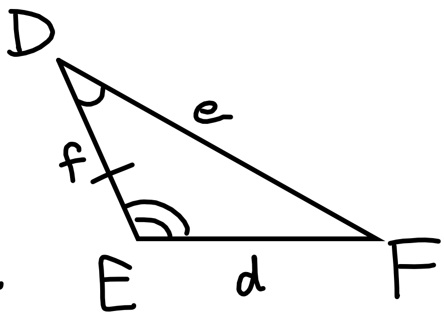
6-gon

4.3 – ASA and SAS Congruence

Postulate 5: The ASA Postulate

If two angles and the included side of one triangle are equal to two angles and the included side of another triangle, the triangles are congruent.

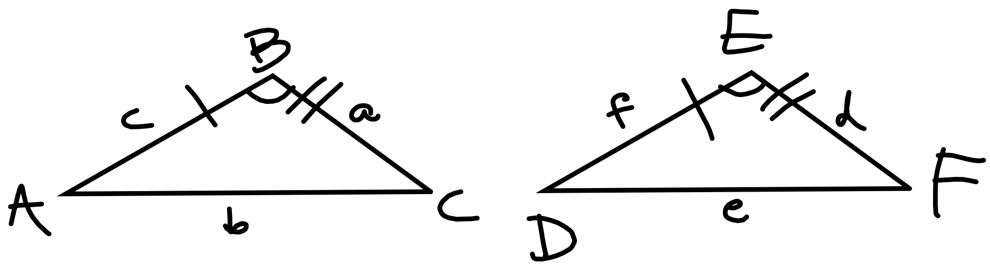


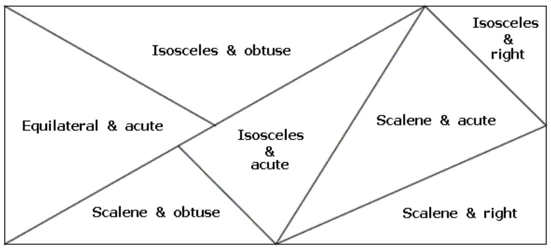


$\triangle ABC \cong \triangle DEF$ because $\angle A = \angle D$, $\angle B = \angle E$ & $c = f$ $(AB = DE)$

Postulate 6: The SAS Postulate

If two sides and the included angle of one triangle are equal to two sides and the included angle of another triangle, the triangles are congruent.





16. Equilateral - all equal sides

17. Acute - all 3 ∠'s are acute

18. Isosceles - 2 equal sides (& 2 equal angles)

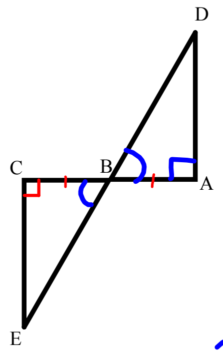
19. Obtuse - 1 obtuse angle

20. Scalene - no equal sides or angles

21. Right - 1 right angle

4.4 – Congruence Proofs

Def: Corresponding parts of congruent triangles are equal.



Given: $CA \perp AD, CB = BA,$
$\angle C$ *is a right angle and*
$\angle CBE$ *and* $\angle DBA$ *are vertical angles.*

Prove: $CE = AD$

1. $CA \perp AD$, $CB = BA$, $\angle C$ is right, $\angle CBE$ & $\angle DBA$ are vertical	Given
2. $\angle CBE = \angle DBA$	vertical angles are equal
3. $\angle A$ is a right angle	perpendicular lines meet @ right angles
4 $\angle A = \angle C$	all right $\angle$'s are equal
5. $\triangle CBE \cong \triangle DBA$	ASA congruence
6. $CE = AD$	corresponding parts of congruent $\triangle$'s are equal