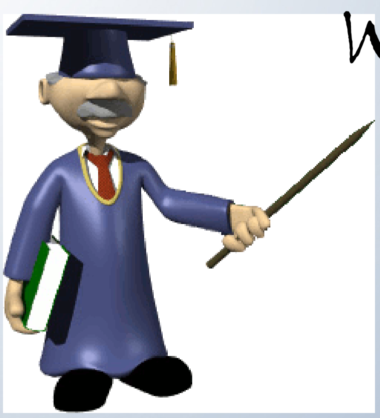
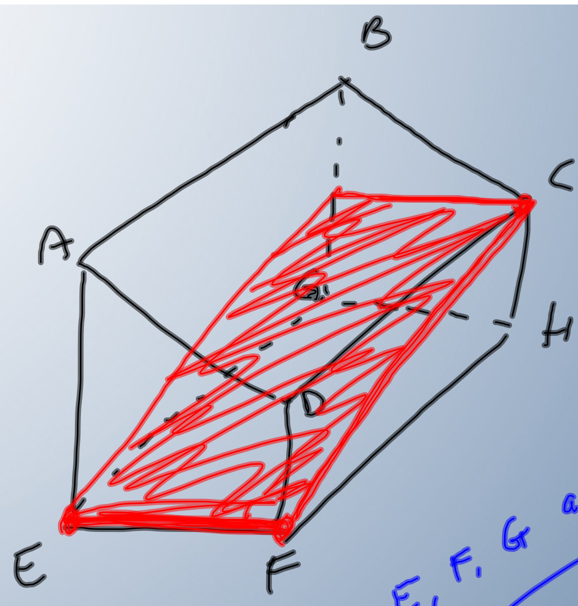


Warm-up exercises:

pg 25, #1-9 (top of page)

1. $\frac{1}{9}$, $\frac{1}{27}$ $\div 3$
2. 49, 56 + 7, +8
3. pt G
4. Any 3 pts are coplanar (Post 1-4)
5. Intersect
6. Skew
7. Parallel
8. Sometimes always either answer ok
9. Always

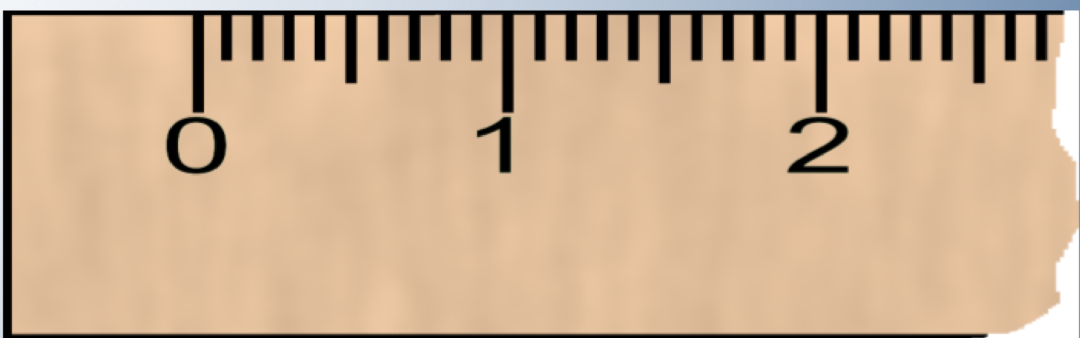


pts E, F, G are coplanar

post 1-4

any 3 non collinear pts are coplanar

Consider the following section of a ruler showing 1" and 2"...



How many points are there btwn the 1" and the 2" marks?

What would you say is the distance btwn pt *A* and pt *B*?

about 1"

line up points w/ruler...

A Quick digression ... What does it mean that 2 things correspond?

- To be ***similar***, to ***match***, to have an ***obvious relationship***

Do 2 things that correspond have to be exactly alike?

- Nope...

Can 2 things that correspond be exactly alike?

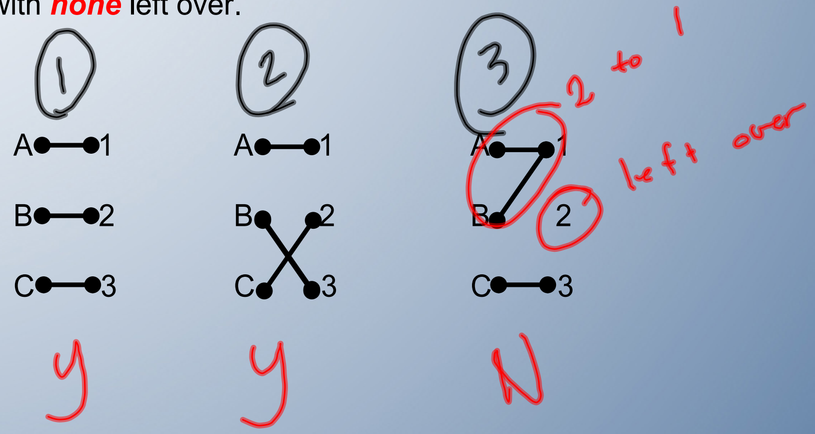
- Yup...
- ...in fact this is a special relationship that is very interesting...
- ...in math we have a special name for this type of correspondence...

One-to-one correspondence

- Can pair ***every*** item in 1 set...

  ...with ***one and exactly one*** item in another set...

  ...with ***none*** left over.



Postulate 1-5 (the Ruler Postulate)

- There's a 1-to-1 correspondence btwn the real number line and the pts on a line.

- Translation...

  ...basically just gives us permission to measure the length of a segment.

Segment Length

- Represent length (len) of segment (seg) $\overline{AB}$ as AB.

$\overline{AB}$ → segment AB

AB → length of $\overline{AB}$

...no bar above the letters.

don't add segments

~~$\overline{AB} + \overline{CD} =$~~

$AB + CD =$

...basically just gives us permission to measure the length of a segment.

$AB = |\, a - b \,|$

length of $\overline{AB}$

$AB = |3 - 7|$
$= |-4|$
$= 4$

What can you say about $\overline{AB}$ and $\overline{CD}$?

Congruent Segments

- Segs of equal len
- Represented by symbol $\cong$
- If $AB = CD$ then $\overline{AB} \cong \overline{CD}$
- Segs of equal len are congruent

X Y 5

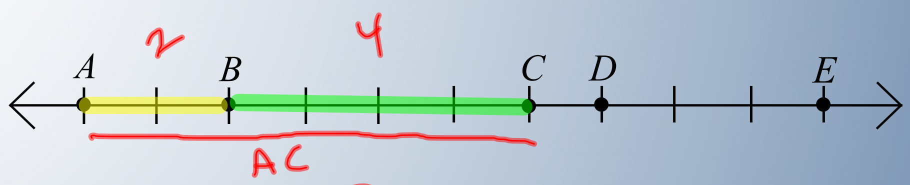
N 5 M

Don't have to be parallel

$\overline{XY} \cong \overline{MN}$

$\overline{XY} \cong \overline{MN}$ ← shapes are congruent.

$XY = MN$ ← numbers are equal



Consider $\overline{AB}$, $\overline{BC}$ and $\overline{AC}$... how do they relate?

- In math:

  $2 + 4 = 6$

  $AB + BC = AC$

- In English:

  The sum of the lengths of segments $\overline{AB}$ and $\overline{BC}$

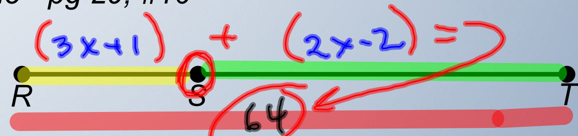
  equals the length of segment $\overline{AC}$.

Post   Seg Add Post

Postulate 1-6 (Segment Addition Postulate)

- If pt B is on $\overline{AC}$ btwn pts A & C, then $AB + BC = AC$.
- ...basically gives us permission to combine segments or add their lengths.

Example - pg 29, #10



If $RS = 3x + 1$, $ST = 2x - 2$, $RT = 64$

Seg Add Post

$(3x+1) + (2x-2) = 64$

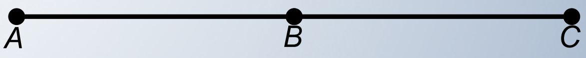
$5x - 1 = 64$

$5x = 65$

$x = 13$

- what is x? $= 13$
- what is RS? $= 3(13)+1 = 40$
- what is ST? $= 2(13)-2 = 24$

Consider the following:

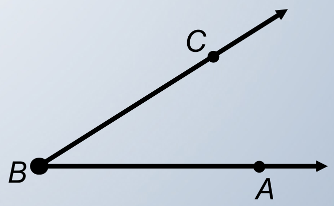


If $AB = BC$ what would you call pt B?

Midpoint of a segment

The pt that divides the seg into 2 $\cong$ segs

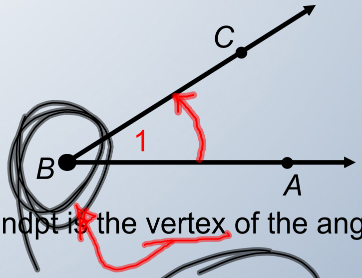
What would we have if 2 rays shared the same endpt but weren't collinear?



An Angle!

Angle

- 2 rays that share a common endpt provided they do not lie on the same line.
- The rays are the sides of the angle.



- The endpt is the vertex of the angle.
- Represented symbol $\angle$
- Named by (see above diagram):

  - The 3 pts defining the rays: $\angle ABC$ (vertex always in the middle!)
  - By the vertex (if there is no ambiguity): $\angle B$
  - Can also number the $\angle$ and refer it by the number: $\angle 1$

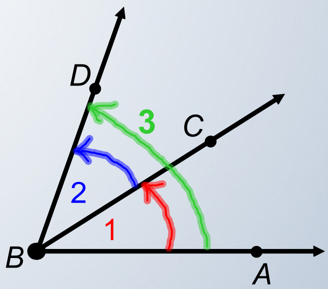
vertex in middle

$\angle ABC$

$\angle 1$

$\angle B$ ← only if unambiguous

by vertex



~~$\angle B$~~ which one do we mean?

$\angle 1$ or $\angle ABC$

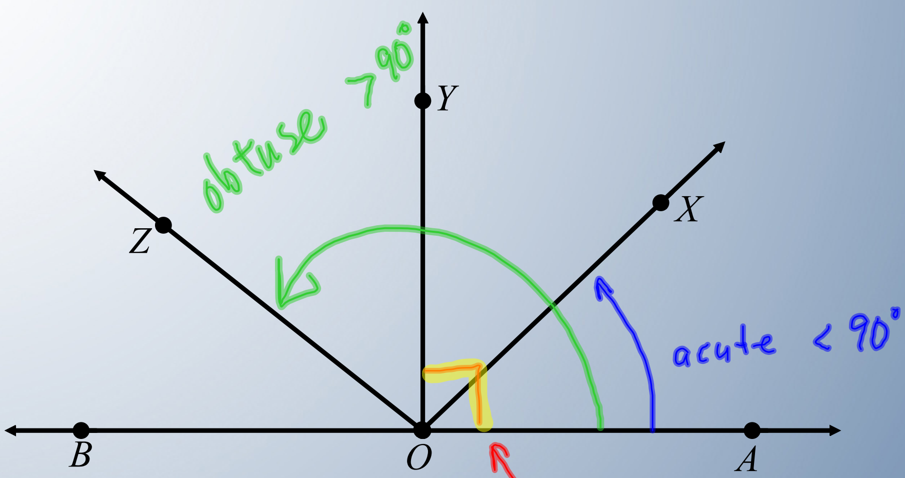
Does it make sense to name any of the 3 angles $\angle B$?

Postulate 1-7 (the Protractor Postulate)

- Simply gives us permission to ...

  ...measure ∠'s

- We note the measure of ∠*COD* as ***m*∠*COD***



right ∠ symbol
= 90°

Types of angles

Acute < 90°
Right = 90°
Obtuse > 90°
Straight = 180°

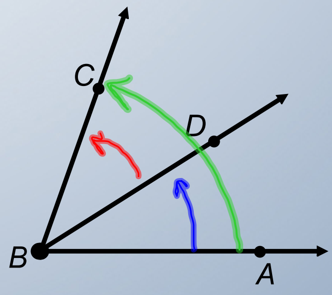
Straight ∠ = 180°

Postulate 1-8 (the Angle Addition Postulate)

∠ Add Post

- If pt *D* lies in the interior of ∠*COD*,

then $m\angle ABD + m\angle DBC = m\angle ABC$



* Gives us permission to add the measures of ∠'s

* Similar to Seg Add Post

$\angle COD \cong \angle DEF$

Congruent angles

Angles that have the same measure

If $m\angle COD = m\angle FGH$, then $\angle COD \cong \angle FGH$

L1.4 HW Problems

Pg 29, #1-35 odd,

43-49 odd,

60, 66, 70-72, 75-78