Morning!

Get started on the quiz right away!

CH 4 Quiz 4.1 - 4.3

① a) $\angle C \cong \angle J$, $\angle A \cong \angle S$, $\angle T \cong \angle D$

b) $\overline{CA} \cong \overline{JS}$, $\overline{AT} \cong \overline{SD}$, $\overline{CT} \cong \overline{JD}$

② SAS

⑤ $\overline{AD} \cong \overline{DC}$ given

⑥ $\angle ADB \cong \angle CDB$ all rt $\angle$s $\cong$

⑤ $\overline{BD} \cong \overline{BD}$ Refl POC

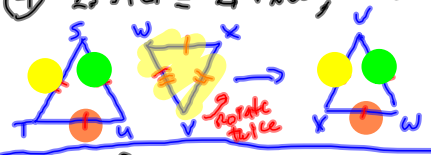
③ a) $\angle C$

b) $\overline{AB}$, $\overline{BC}$

c) $\angle A$, $\angle B$

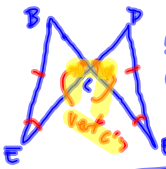
d) $\overline{AC}$

④ $\triangle STU \cong \triangle WXV$, SSS



⑤ NP

⑥ $\triangle CEB \cong \triangle CFD$, AAS



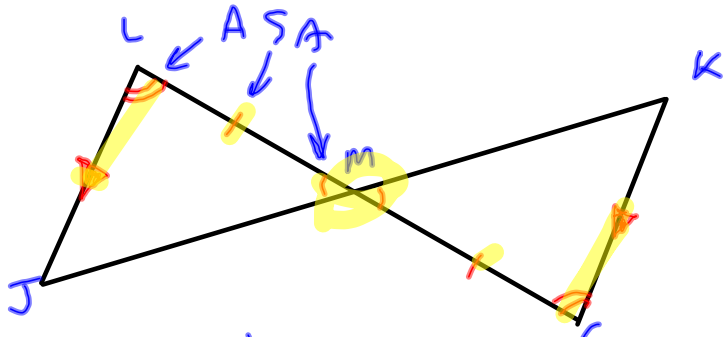
A $\angle BCE \cong \angle DCF$ vert $\angle$s $\cong$

A $\angle E \cong \angle F$ given

S $\overline{BE} \cong \overline{DF}$ given

⑦ NP

(45) $\overline{LJ} \parallel \overline{KG}$, M is midpt of $\overline{LG}$



$\angle LMJ \cong \angle KMG$
vert $\angle$'s $\cong$

$\angle JLM \cong \angle KGM$
alt int $\angle$'s $\cong$ $\because$ $\parallel$ lines

$\overline{LM} \cong \overline{MG}$ def. midpt

$\therefore \triangle JLM \cong \triangle KGM$

What are the 4 ways we can prove $\Delta \cong$?

SSS

SAS

ASA

AAS

~~ASS~~

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What about angle-side-side (ASS)?

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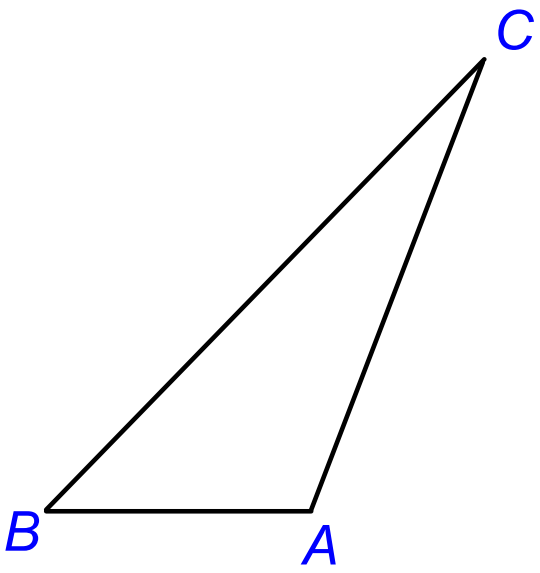

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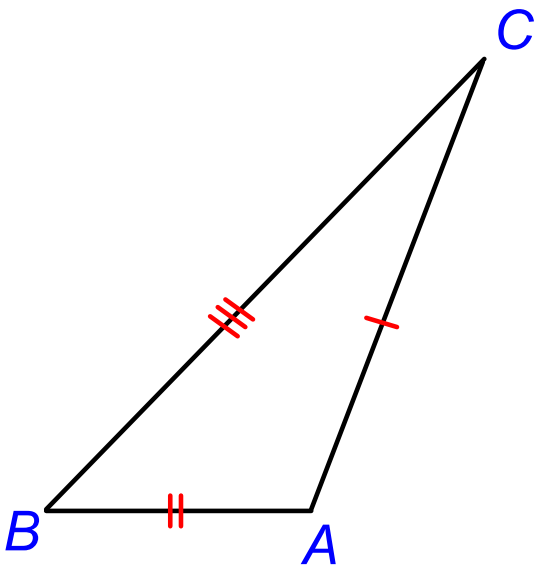

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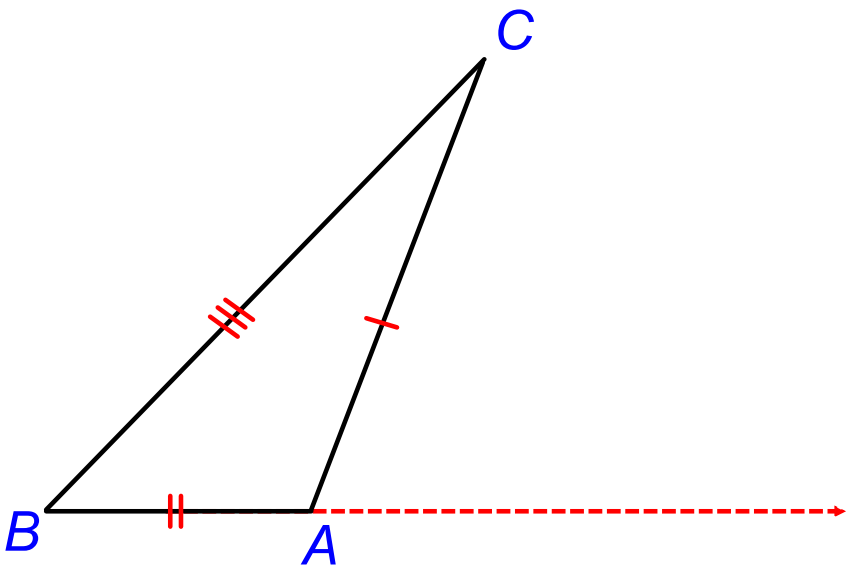

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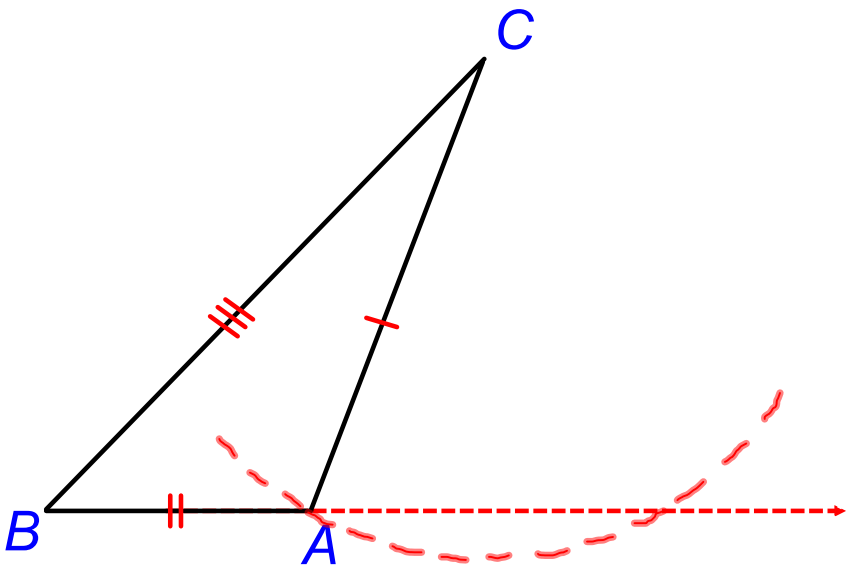

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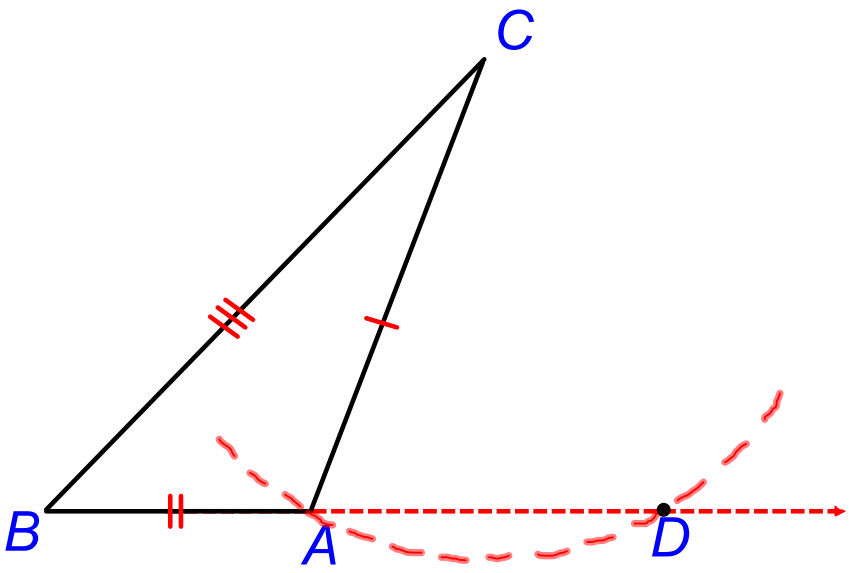

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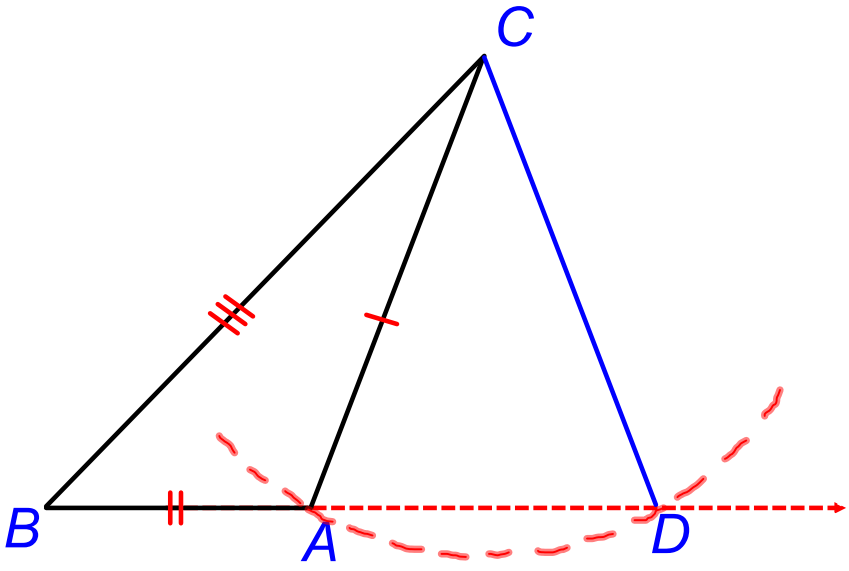

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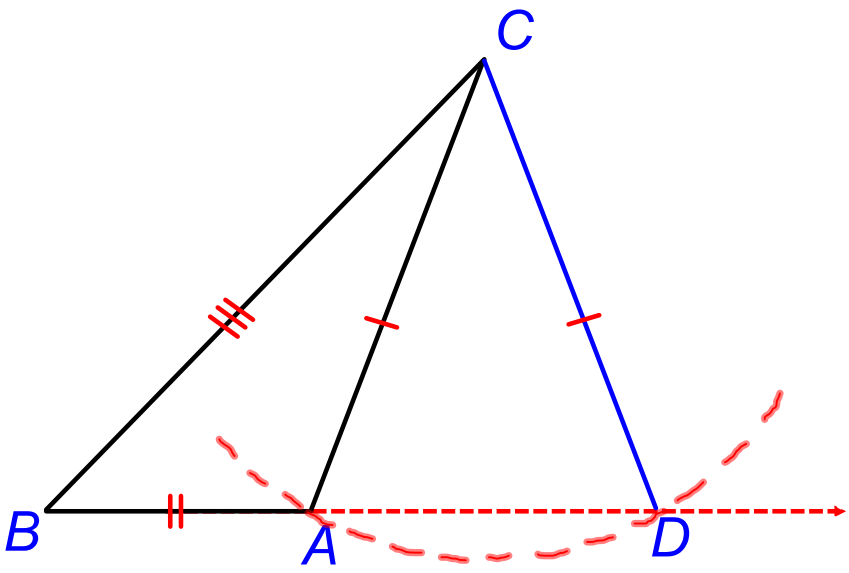
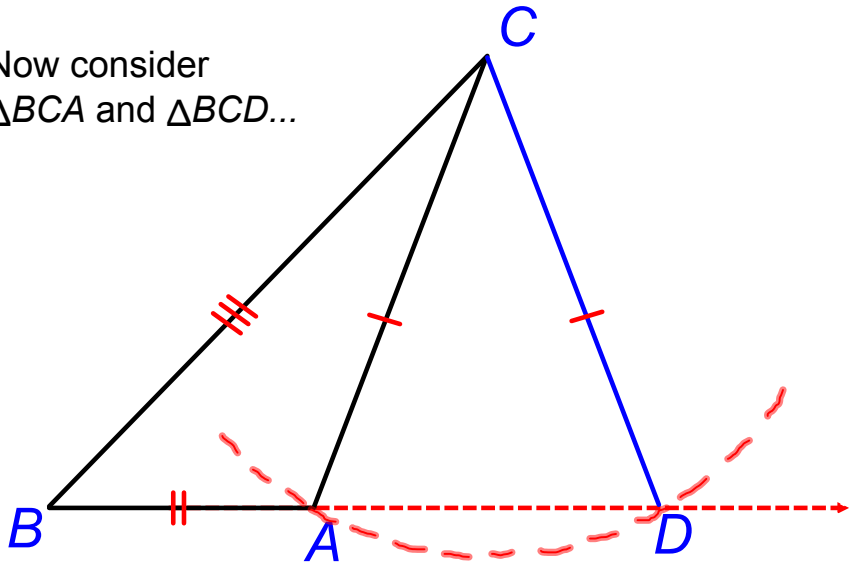


What about angle-side-side (ASS)?

Now consider
ΔBCA and ΔBCD...



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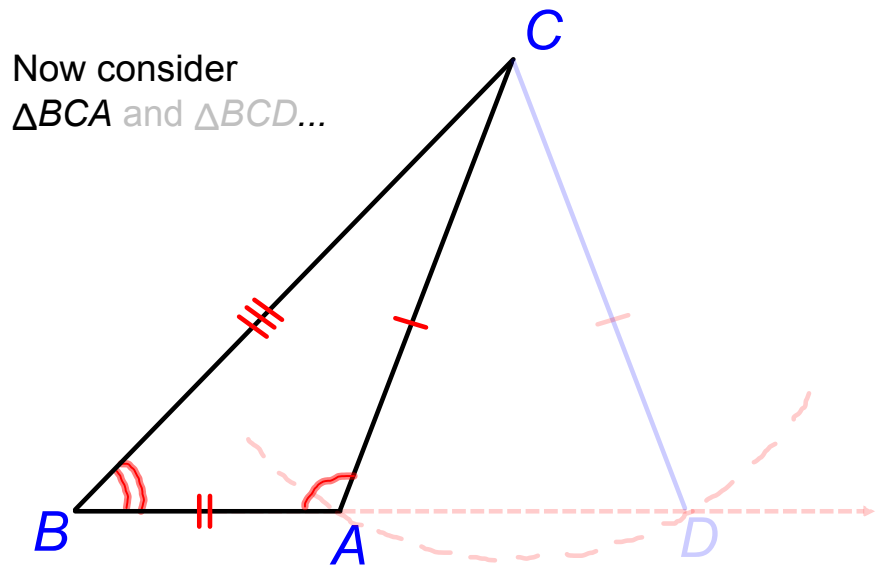

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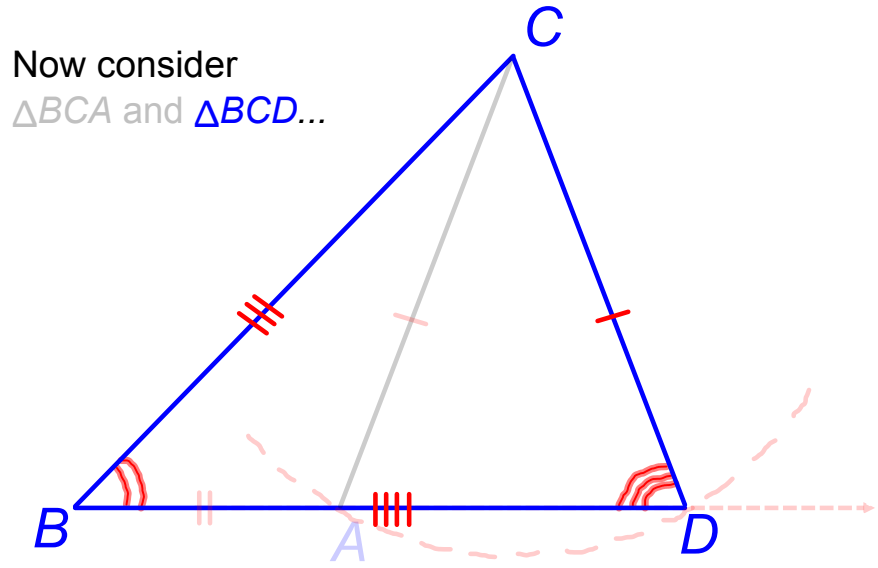

What are the 4 ways we can prove $\Delta \cong$?

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SSS
SAS
AAS
ASA

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The defn of $\Delta \cong$ depends on determining...

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The defn of $\Delta \cong$ depends on determining that corresponding parts are congruent.

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The defn of $\Delta \cong$ depends on determining that ***corresponding parts are congruent***.

What are the 4 ways we can prove $\Delta \cong$?

SSS
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AAS
ASA

The defn of $\Delta \cong$ depends on determining that ***a certain set of corresponding parts are congruent***.

Definition: Congruent Polygons

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Two polygons are congruent ***iff*** all

corresponding parts are congruent.

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All corresponding parts of 2 polygons are $\cong$ ***iff***

the polygons are congruent.

Definition: Congruent Polygons

All corresponding parts of 2 polygons are ≅ *iff* the polygons are congruent.

Once I know the Δ are ≅
Then I know ALL corresponding parts are ≅

Corresponding parts

of congruent triangles

are _____.

Corresponding parts

of congruent triangles

are congruent.

Corresponding parts

of congruent triangles

are congruent.

Corresponding **P**arts

of congruent triangles

are congruent.

Corresponding **P**arts

of **C**ongruent triangles

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Corresponding **P**arts

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CPCTC

How do we use ***CPCTC***?

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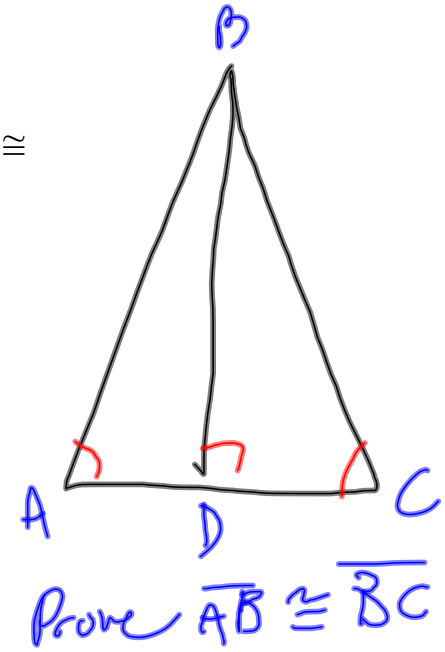
...to show that certain parts of 2 Δ's are ≅



How do we use ***CPCTC***?

...to show that certain parts of 2 Δ's are ≅

1) Usually start with limited information

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2) Prove the Δ's $\cong$ using SSS, SAS, AAS, or ASA

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3) Identify remaining corresponding parts

How do we use ***CPCTC***?

...to show that certain parts of 2 Δ's are ≅

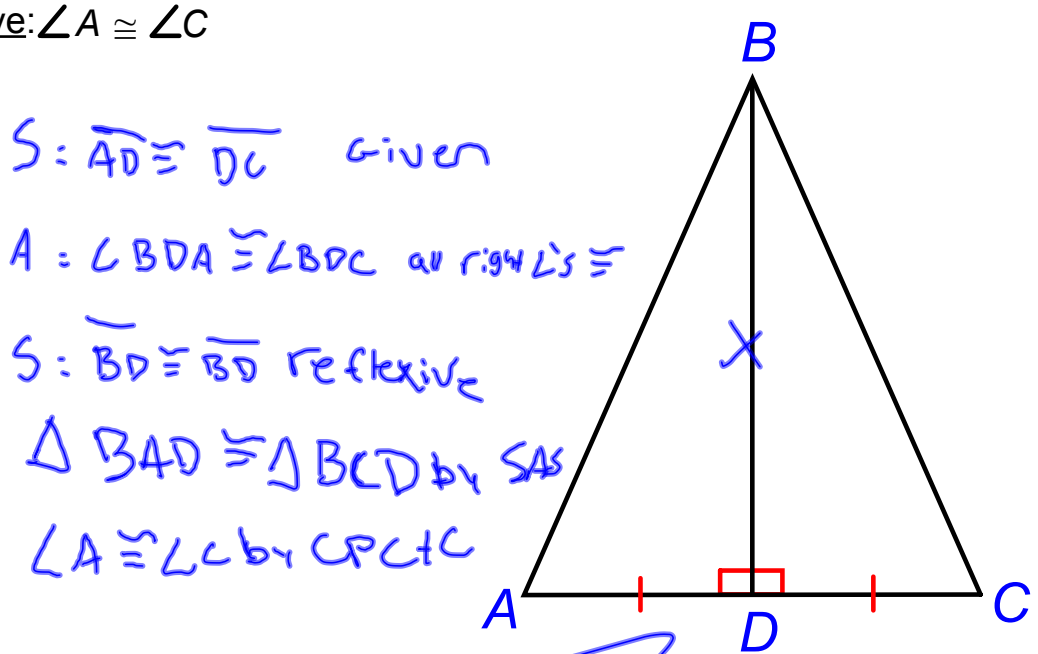
1) Usually start with limited information

2) Prove the Δ's ≅ using SSS, SAS, AAS, or ASA

3) Identify remaining corresponding parts

4) CPCTC ⇒ all corresponding parts are ≅

Prove: $\angle A \cong \angle C$



S: $\overline{AD} \cong \overline{DC}$ given

A: $\angle BDA \cong \angle BDC$ all right $\angle$'s $\cong$

S: $\overline{BD} \cong \overline{BD}$ reflexive

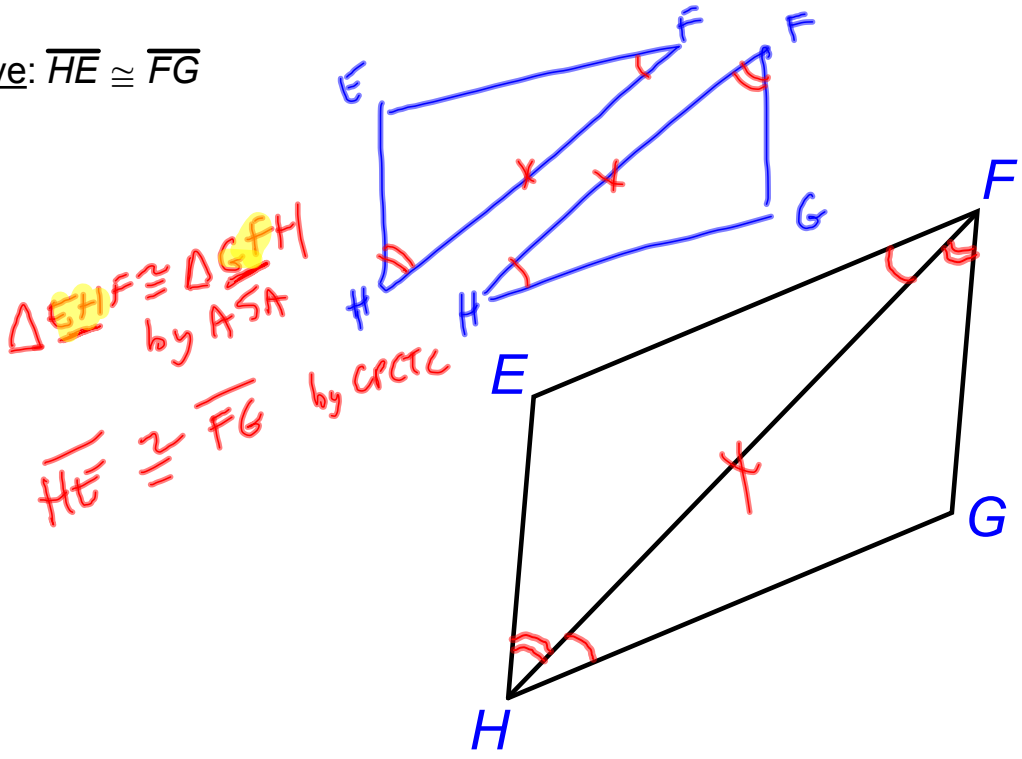
$\triangle BAD \cong \triangle BCD$ by SAS

$\angle A \cong \angle C$ by CPCTC

Parker

QED

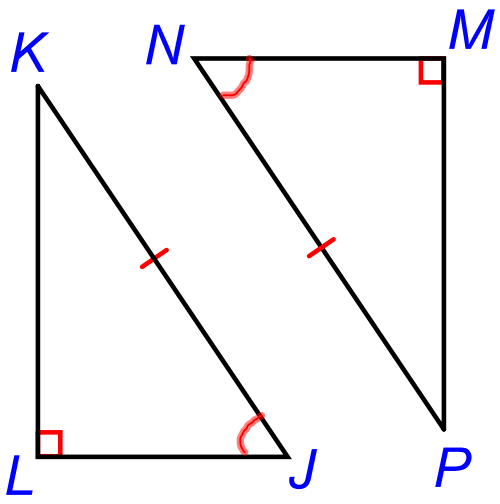
Prove: $\overline{HE} \cong \overline{FG}$



$\Delta EHF \cong \Delta GFH$ by ASA

$\overline{HE} \cong \overline{FG}$ by CPCTC

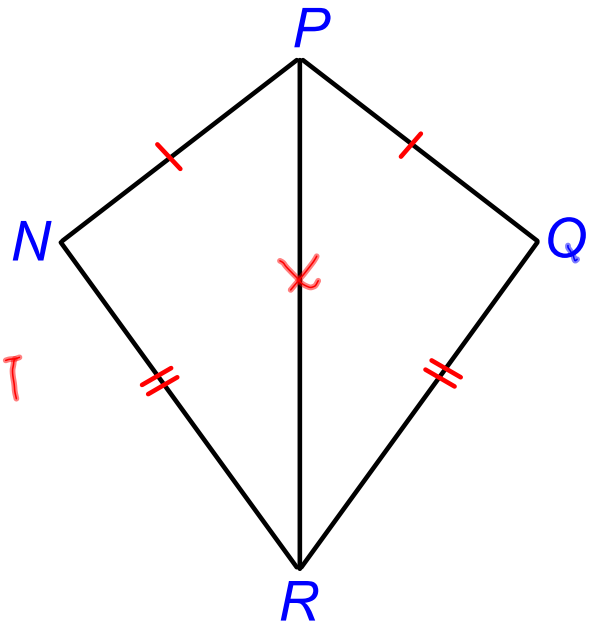
Prove: $\angle K \cong \angle P$



$\Delta KLJ \cong \Delta PMN$ by AAS

$\angle K \cong \angle P$ by CPCTC

Prove: $\angle N \cong \angle Q$



$\triangle PNR \cong \triangle PQR$ by

$\angle N \cong \angle Q$ CPCPT


Geometry
JUST MARRIED


Geometry
Algebra
$y = mx + b$
JUST MARRIED

Analytic Geometry

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Using equations (algebra) to learn things about shapes (geometry).

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

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$$\text{Mid pt} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Analytic Geometry

$A = bh$

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$A = bh$

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$A = {}^1/_2 bh$

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Using equations (algebra) to learn things about shapes (geometry).

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$A = \pi r^2$

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$C = 2\pi r$

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$y - y_1 = m(x - x_1)$

Analytic Geometry

Using equations (algebra) to learn things about shapes (geometry).

$A = bh$

$A = \pi r^2$

$A = {}^1/_2 bh$

$C = 2\pi r$

$Ax + By = C$

$y - y_1 = m(x - x_1)$

$y = mx + b$

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$m\angle A + m\angle B + m\angle C = 180$

$$\text{Mid pt} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

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$A = \pi r^2$

$A = \frac{1}{2}bh$

$C = 2\pi r$

$Ax + By = C$

$y - y_1 = m(x - x_1)$

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$$\text{Mid pt} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$2x = 9 + y$$

$$x + y = 90$$

Systems (more than one) of Linear (lines) Equations (algebra)

$$2x = 9 + y$$
$$x + y = 90$$

1) Pick 1 of the equations...and solve for y
2) Subst back into the other equation
3) Solve for x
4) Use known value of x to find y
5) Double-check your answer!

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$$2x = \overset{99}{\cancel{9 + 90}} - x$$

$$+x \qquad\qquad +x$$

1) Pick 1 of the equations...and solve for y
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$$3x = 99$$
$$x = 33$$

1) Pick 1 of the equations...and solve for y
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$$x = 33 \qquad 2x = 9 + y$$
$$x + y = 90$$

1) Pick 1 of the equations...and solve for y
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$x = 33$ $2x = 9 + y$

$x + y = 90$

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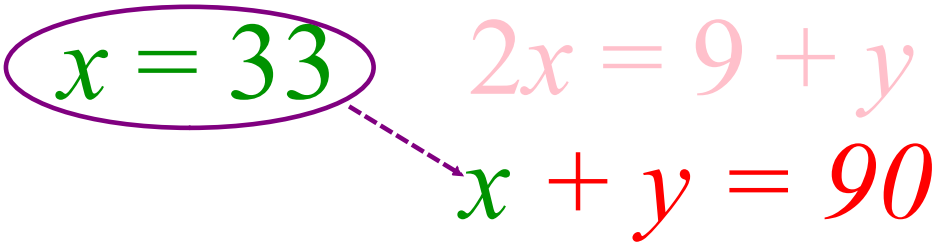

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$x = 33$ $2x = 9 + y$

$33 + y = 90$

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$33 + y = 90$

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$x = 33$

$y = 57$

$2x = 9 + y$

$33 + y = 90$

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$y = 57$ $x + y = 90$

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$x = 33$ $2(33) = 9 + 57$

$y = 57$ $33 + 57 = 90$

1) Pick 1 of the equations...and solve for y
2) Subst back into the other equation
3) Solve for x
4) Use known value of x to find y
5) Double-check your answer!

$x = 33$ $66 = 66$

$y = 57$ $90 = 90$

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3) Solve for x
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5) Double-check your answer!

$x = 33$ $66 = 66$ ✓

$y = 57$ $90 = 90$ ✓

1) Pick 1 of the equations...and solve for y
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Solve this system for x and y

$$3x - y = -5$$
$$x - y = -1$$

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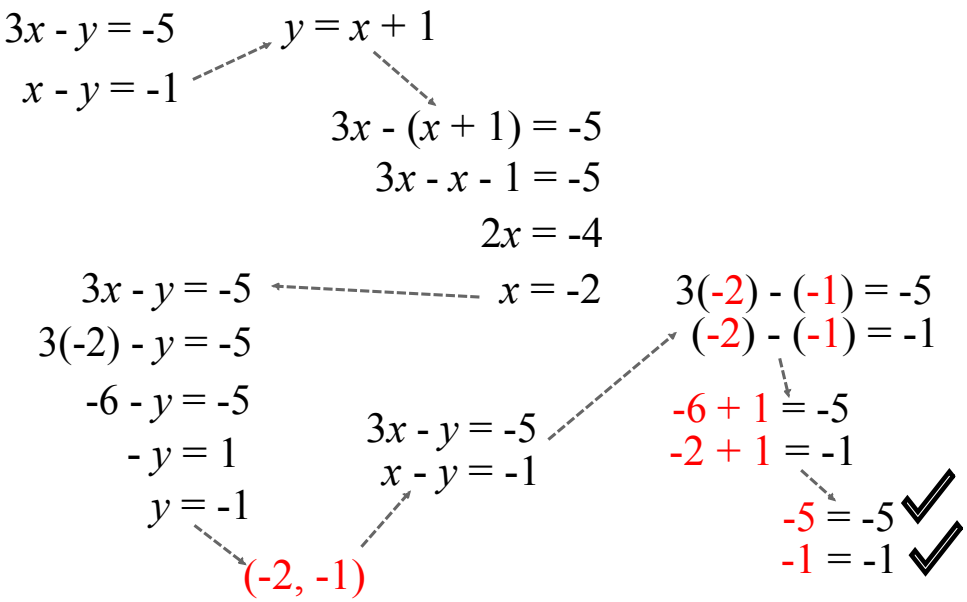
$$3x - y = -5$$
$$x - y = -1$$

(-2, -1)

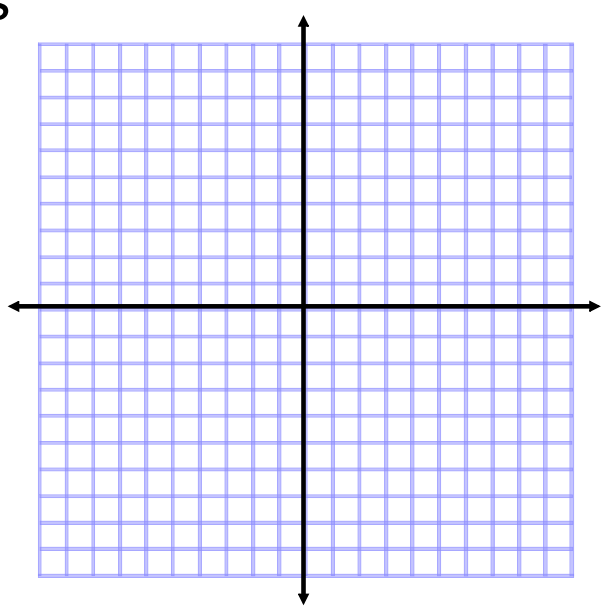
Solve this system for x and y



Graph these 2 lines

$3x - y = -5$

$x - y = -1$



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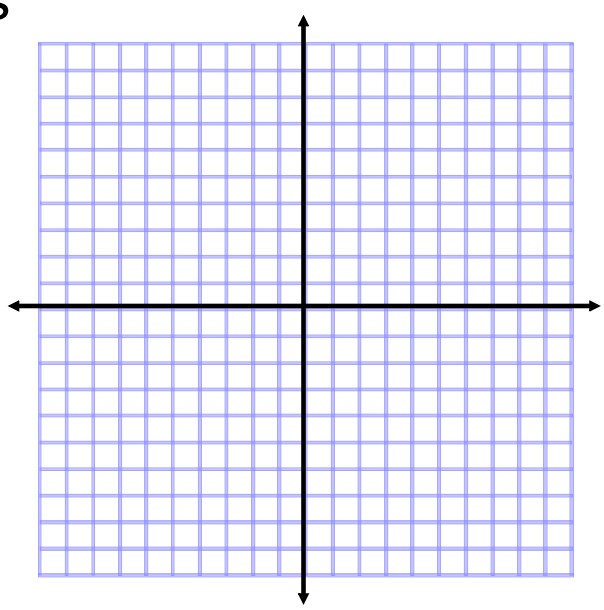
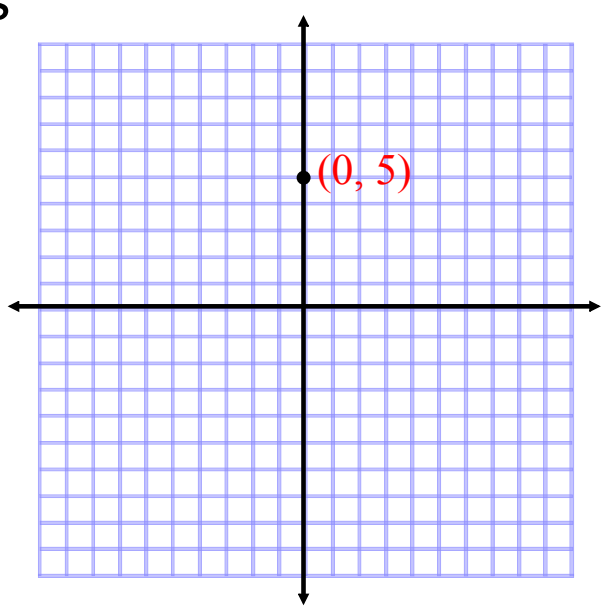


Graph these 2 lines

$3x - y = -5$

$x - y = -1$

$x = 0, y = 5$

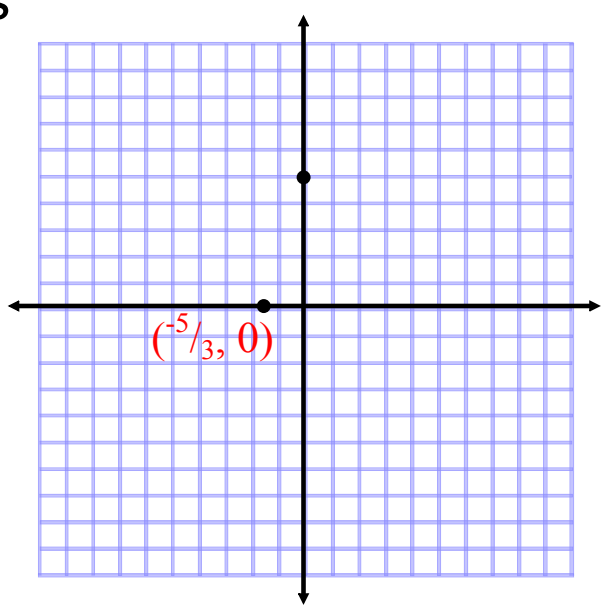


Graph these 2 lines

$3x - y = -5$

$x - y = -1$

$x = {}^{-5}/_{3}, y = 0$



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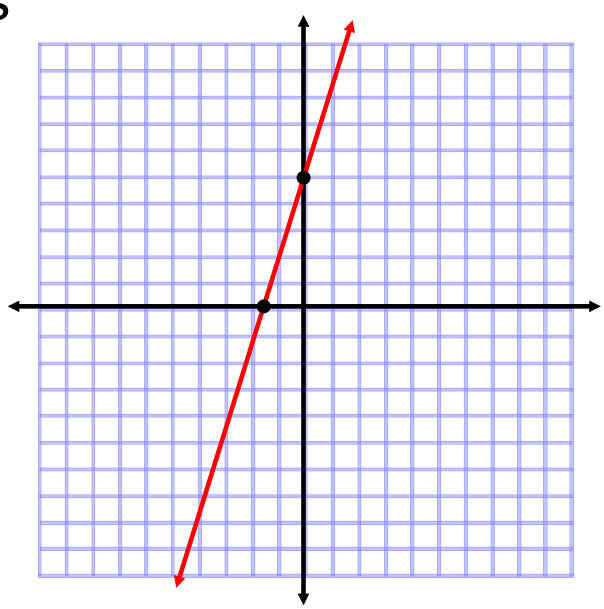
$x - y = -1$



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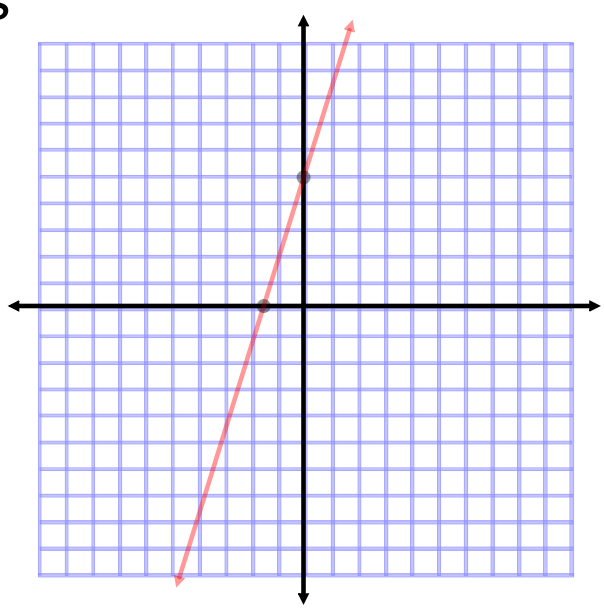
$x - y = -1$

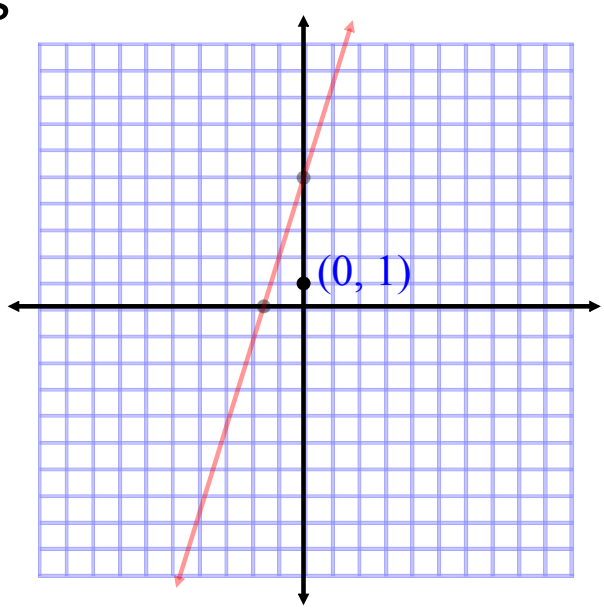


Graph these 2 lines

$3x - y = -5$

$x - y = -1$

$x = 0, y = 1$

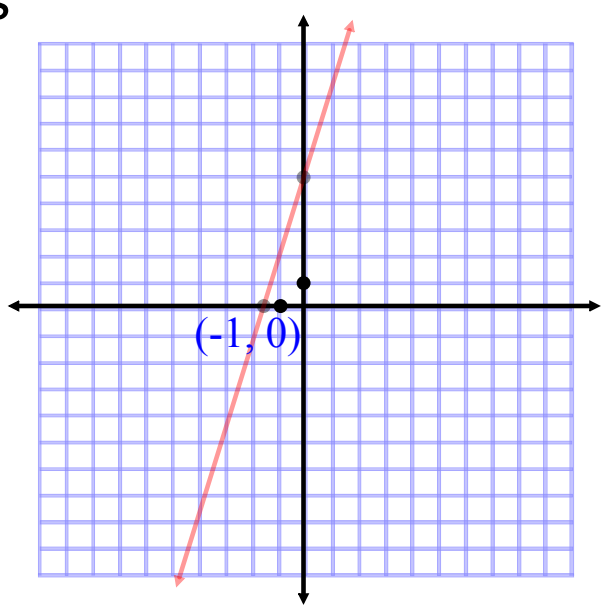


Graph these 2 lines

$3x - y = -5$

$x - y = -1$

$x = -1, y = 0$



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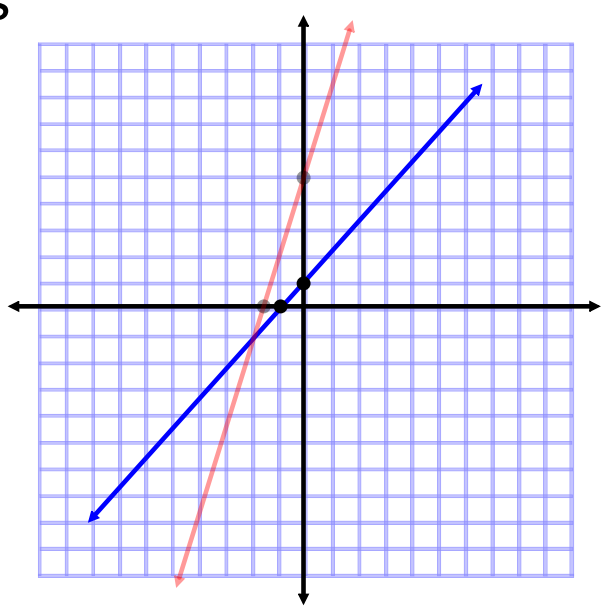

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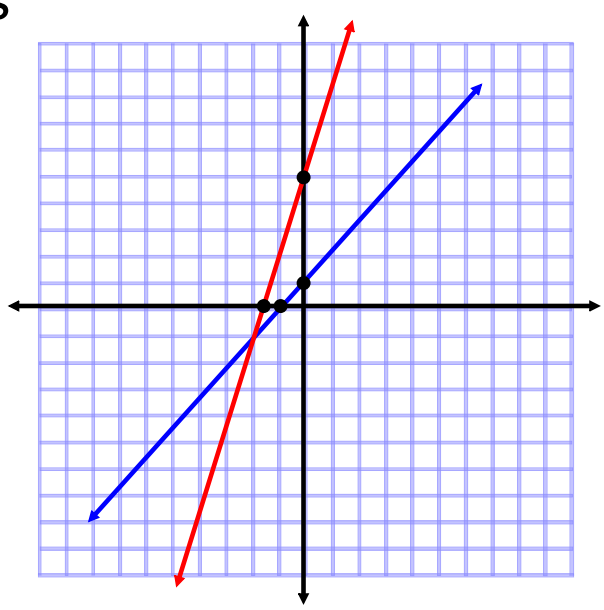

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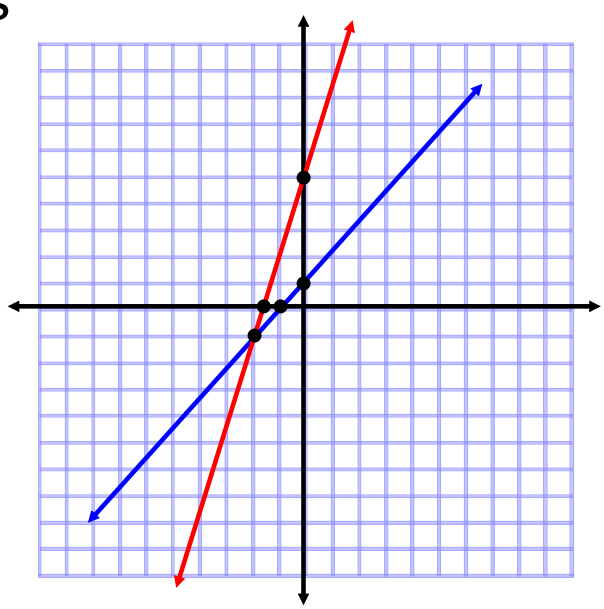

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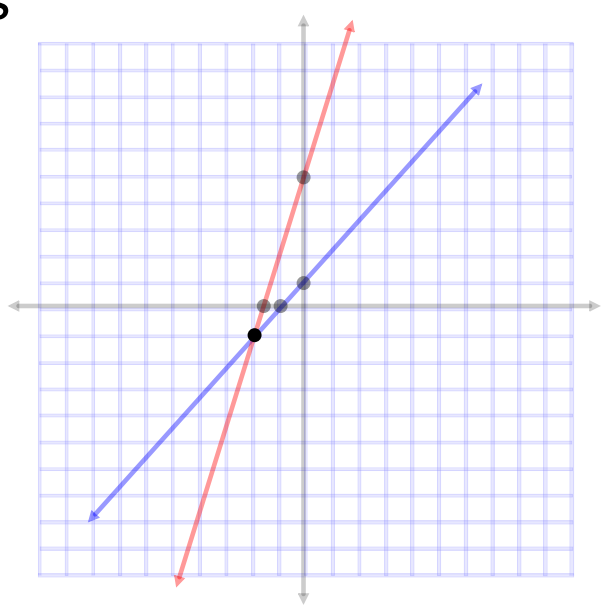
$x - y = -1$



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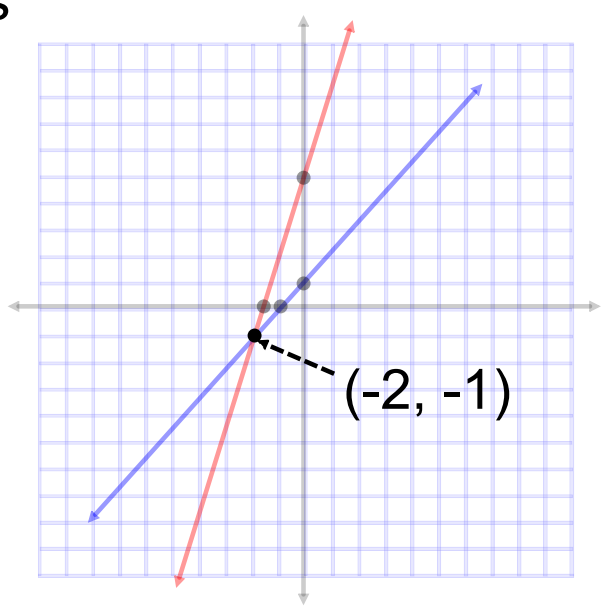
$x - y = -1$



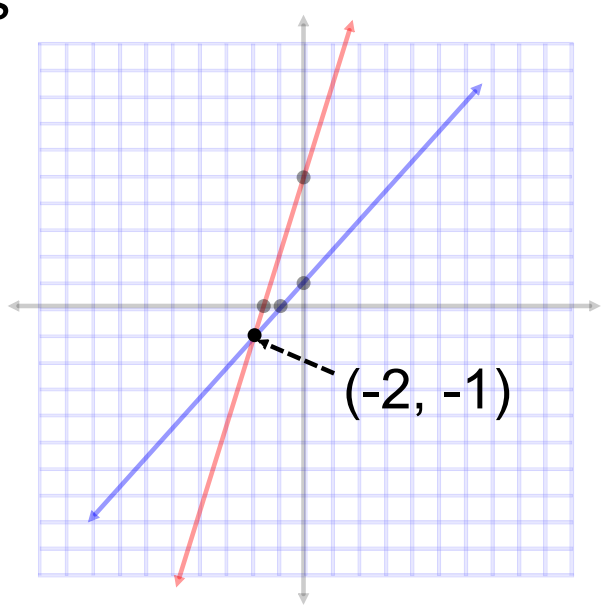
Graph these 2 lines

$3x - y = -5$

$x - y = -1$

$x = -2$

$y = -1$



Graph these 2 lines

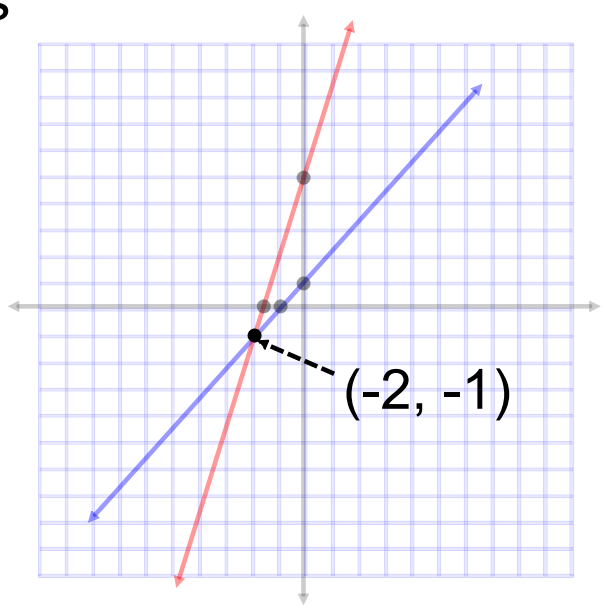
$3x - y = -5$

$x - y = -1$

$x = -2$

$y = -1$

⇧ *solution from prior page...*



Graph these 2 lines

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$x = -2$

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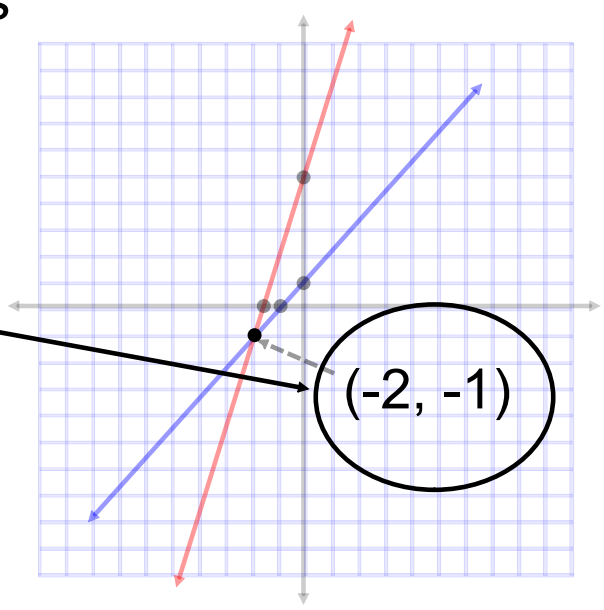


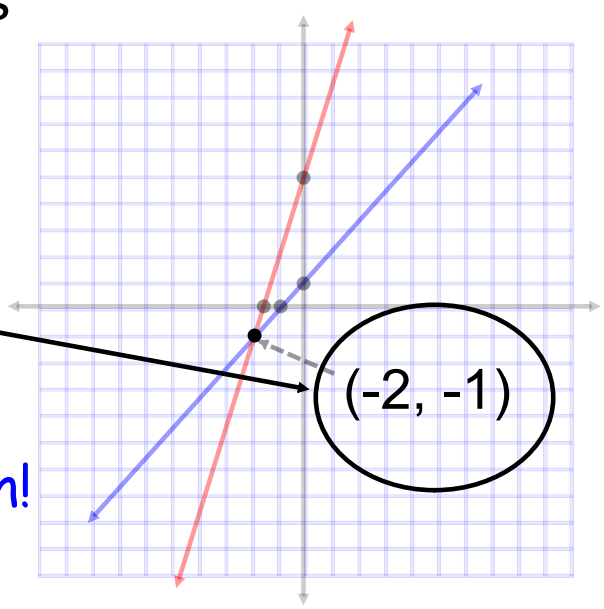
Graph these 2 lines

$3x - y = -5$

$x - y = -1$

$x = -2$

$y = -1$



The solution is the point of intersection!

Solve the system

$16x - y = 2$

$3x - y = -11$

Solve the system

$16x - y = 2$

$3x - y = -11$

(1, 14)

Solve the system

$16x - y = 2$ ⟶ $y = 16x - 2$

$3x - y = -11$

$3x - (16x - 2) = -11$

$3x - 16x + 2 = -11$

$-13x = -13$

$x = 1$

$3x - y = -11$

$3(1) - y = -11$

$3 - y = -11$

$y = 14$

(1, 14)

$16x - y = 2$

$3x - y = -11$

$16(1) - 14 = 2$

$3(1) - 14 = -11$

$2 = 2$ ✓

$-11 = -11$ ✓

Solve the system

$$3x - y = 7$$
$$9x - 3y = 3$$

Solve the system

$$3x - y = 7 \dashrightarrow y = 3x - 7$$
$$9x - 3y = 3$$

$$9x - 3(3x - 7) = 3$$
$$9x - 9x + 21 = 3$$
$$21 \neq 3$$

oops, doesn't work!
⇒no solution
⇒the lines don't intersect

Solve the system

$3x = 2y + 5$

$6x - 4y = 10$

Solve the system

$3x = 2y + 5$ ⟶ $y = {}^3/_2 x - {}^5/_2$

$6x - 4y = 10$

$6x - 4({}^3/_2 x - {}^5/_2) = 10$

$\cancel{6x} - \cancel{6x} + 10 = 10$

$10 = 10$

$-10 \quad -10$

$0 = 0$

err, where did the variable go?

⇒same line

⇒infinite number of solutions

1) If you get a value for x and y that work:
* 1 solution
* Intersection point of the 2 lines

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---

2) If the variables disappear leaving 0 = 0:
* Infinite # of solutions
* Equations represent same line

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* 1 solution
* Intersection point of the 2 lines

---

2) If the variables disappear leaving 0 = 0:
* Infinite # of solutions
* Equations represent same line

---

3) If you get false result (i.e. 3 = 7)
* No solutions
* The lines don't intersect

L 4-4 HW Problems

Pg 204 #1-4, 7-13, 15, 19, 21, 28-36

Pg 209 #1-9