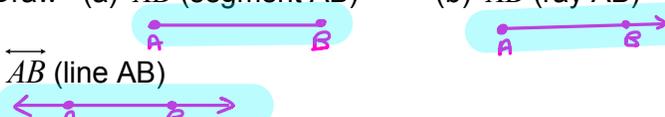
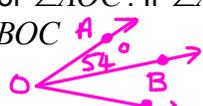
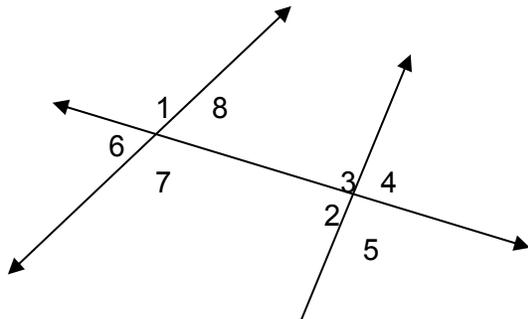
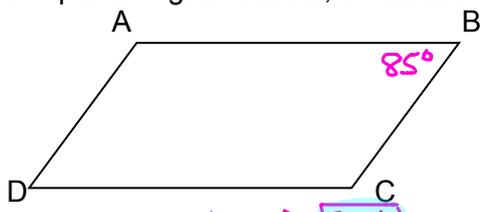
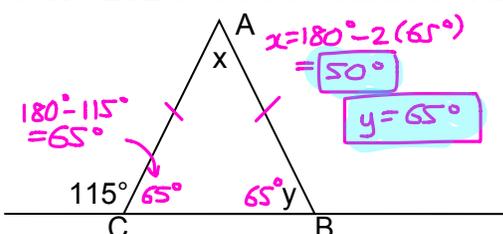
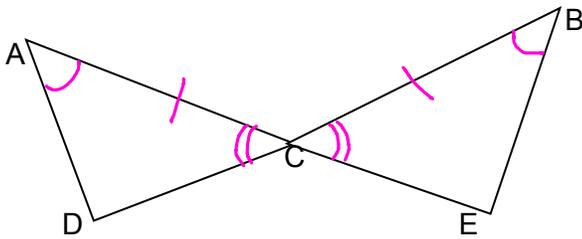


<p>1. Draw a regular octagon. On it, draw all lines of symmetry.</p> 	<p>2. Draw line segment \overline{AB}. C is the midpoint of \overline{AB}. If $AC = 8$, find AB and BC.</p> <p>$AB = 16$ $BC = 8$</p> 
<p>3. The relationship is: "is the same age as" Is this relationship (a) reflexive (b) symmetric (c) transitive? Give an example or counterexample for each of these.</p> <p>TRUE (a) John is the same age as John. TRUE (b) John is the same age as Sam & Sam is the same age as John. TRUE (c) If John is the same age as Sam & Sam is the same age as Tom, then John is the same age as Tom.</p>	<p>4. Given the points A (-2, 3) and B (6, -5) find</p> <p>(a) the midpoint of $\overline{AB} = \left(\frac{-2+6}{2}, \frac{3+(-5)}{2}\right) = (2, -1)$ (b) the length of $\overline{AB} = \sqrt{(-2-6)^2 + (3-(-5))^2} = \sqrt{64+64} = \sqrt{2 \cdot 64} = 8\sqrt{2}$ (c) the slope of $\overline{AB} = \frac{3-(-5)}{-2-6} = \frac{8}{-8} = -1$</p>
<p>5. For the line $y = 3x + 2$, find the equation of the line passing through the point (3,2) and (a) parallel and (b) perpendicular to the given line.</p> <p>[see end]</p>	<p>6. Define:</p> <p>(a) supplementary angles: Pair angles with sum 180° (b) complementary angles: Pair angles with sum 90°</p>
<p>7. Draw (a) \overline{AB} (segment AB) (b) \overrightarrow{AB} (ray AB) (c) \overleftrightarrow{AB} (line AB)</p> 	<p>8. Continue the pattern for the next 2 numbers:</p> <p>(a) 1, 4, 9, 16, 25, 36, 49 (b) 1, 3, 6, 10, 15, 21, 28</p>
<p>9. B is in the interior of $\angle AOC$. If $\angle AOC = 70^\circ$ and $\angle AOB = 54^\circ$, find $\angle BOC$.</p>  <p>$70^\circ - 54^\circ = 16^\circ$</p>	<p>10. Let B be between C and A. Use the segment addition postulate to solve for x.</p> <p>$BC = 4x + 3$ $AB = 2x - 1$ $AC = 62$. Find BC.</p> <p>$(2x-1) + (4x+3) = 62$ $6x + 2 = 62$ $6x = 60$ $x = 10$ $BC = 4(10) + 3 = 43$</p>
<p>11. Find the sum of the measures of the interior angles of a convex octagon.</p> <p>$(8-2)(180^\circ) = 1080^\circ$</p>	<p>12. Define what is meant by congruent.</p> <p>All corresponding sides & angles are \cong. They are exactly the same.</p>
<p>13.</p> 	<p>What type of angles are:</p> <p>(a) $\angle 1$ and $\angle 7$ (b) $\angle 1$ and $\angle 6$ (c) $\angle 1$ and $\angle 5$ (d) $\angle 3$ and $\angle 7$ (e) $\angle 2$ and $\angle 7$ (f) $\angle 1$ and $\angle 3$</p> <p>(a) vertical \angle's (b) linear pair (c) alt. ext. \angle's (d) alt. int. \angle's (e) same side int. \angle's (f) corresponding \angle's</p>
<p>14. (a) The measure of each exterior angle of a regular hexagon is: $\frac{360^\circ}{6} = 60^\circ$ (b) The measure of each interior angle of a regular hexagon is: $(6-2)180^\circ = 720^\circ$ or $180^\circ - 60^\circ = 120^\circ$</p>	<p>15. If $\triangle ABC$ is congruent to $\triangle DEF$ then (a) $BC \cong ?$ and (b) $\angle A \cong ?$</p> <p>EF $\angle D$</p>
<p>16. Define:</p> <p>(a) an equiangular polygon: All \angle's \cong (b) an equilateral polygon: All sides \cong (c) a regular polygon: All \angle's & sides \cong</p>	<p>17. The angles of a hexagon differ from each other by 5° when put in ascending order. What are the angles?</p> <p>$x + (x+5) + (x+10) + (x+15) + (x+20) + (x+25) = 720$ $6x + 75 = 720$ $6x = 645$ $x = 107.5^\circ$ $107.5^\circ, 112.5^\circ, 117.5^\circ, 122.5^\circ, 127.5^\circ, 132.5^\circ$</p>
<p>18. For parallelogram ABCD, if $m\angle ABC = 85^\circ$, then:</p>  <p>(a) $m\angle BCD = ?$ $180^\circ - 85^\circ = 95^\circ$ (b) $m\angle CDA = ?$ 85°</p>	<p>19. $AC \cong AB$. Find the measure of x and y.</p>  <p>$x = 180^\circ - 2(65^\circ) = 50^\circ$ $180^\circ - 115^\circ = 65^\circ$ $y = 65^\circ$</p>

20. A trapezoid has parallel sides that measure 10 cm and 14 cm. What is the length of the midsegment?



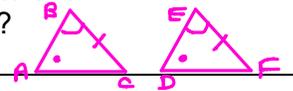
22. $\angle A \cong \angle B$ and $AC \cong BC$.



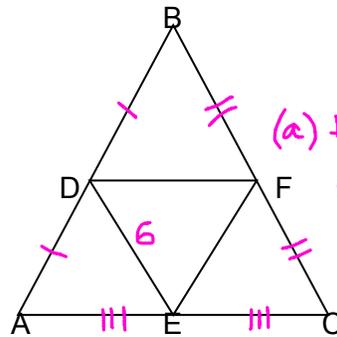
$\triangle ADC \cong \triangle BEC$ by what postulate? **ASA**

21. Given $\angle B \cong \angle E$ and $BC \cong EF$. What other piece of information is needed to show $\triangle ABC \cong \triangle DEF$ by AAS Congruence Postulate?

$\angle A \cong \angle D$



23.



(a) $BC = 2(6) = 12$
 (b) $BC = 2DE$
 $2x + 1 = 2(\frac{3}{2}x - 2)$
 $2x + 1 = 3x - 4$
 $5 = x$

(a) D is the midpoint of AB, F is the midpoint of BC and E is the midpoint of AC. If $DE = 6$, find BC.
 (b) If instead, $BC = 2x + 1$ and $DE = \frac{3}{2}x - 2$. Solve for x

24. Rewrite the statement in the if-then form: Every equilateral triangle has 3 congruent angles.

A \triangle is equilateral IFF it has 3 \cong angles.

25. Define (a) an acute triangle, (b) an obtuse triangle, (c) an isosceles triangle, (d) a scalene triangle

(a) All \angle 's acute (b) one obtuse \angle (c) at least 2 \cong sides. (d) No sides \cong

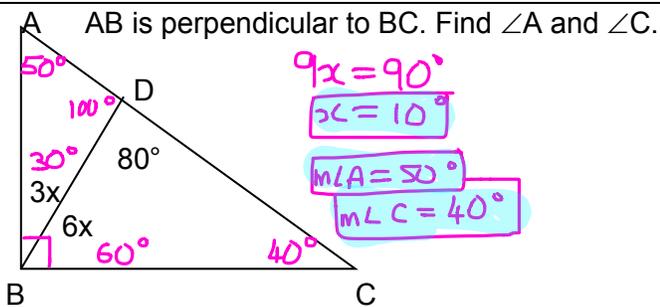
26. Solve:
 $3d + 5t = 42 \times 4 \rightarrow 12d + 20t = 168$
 $4d + 3t = 45 \times 3 \rightarrow 12d + 9t = 135$
 $3d + 5t = 42$
 $3d + 15 = 42$
 $3d = 27$
 $d = 9$
 $11t = 33$
 $t = 3$

27. WXYZ is a rectangle. $WX = 5x - 4$ and $XY = 3x + 2$ and the perimeter of the rectangle is 32. Find the numerical value of ZY.

$(5x - 4) + (3x + 2) = 16$
 $8x - 2 = 16$
 $8x = 18$
 $x = \frac{18}{8} = \frac{9}{4} = 2.25$
 $ZY = WX = 5x - 4 = 5(2.25) = 11.25$

28. Define congruent polygons? **All corresponding sides & \angle 's are \cong**

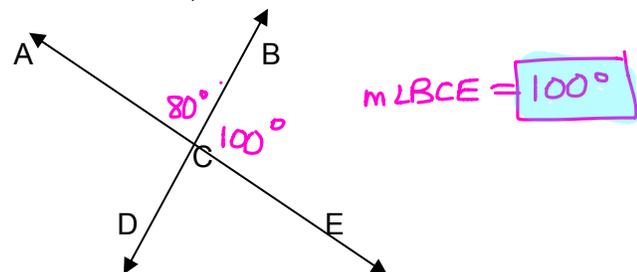
29. AB is perpendicular to BC. Find $\angle A$ and $\angle C$.



$9x = 90^\circ$
 $3x = 10^\circ$
 $m\angle A = 30^\circ$
 $m\angle C = 40^\circ$

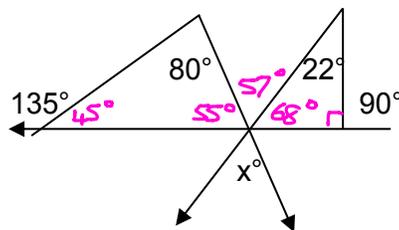
30. (a) The medians of a triangle all pass through which point? **Centroid**
 (b) The angle bisectors of a triangle all pass through which point? **Incenter**
 (c) The altitudes of a triangle all pass through which point? **Orthocenter**
 (d) The perpendicular bisectors of a triangle all pass through which point? **Circumcenter**

31. If $\angle ACB = 80^\circ$, what is $\angle BCE$?



$m\angle BCE = 100^\circ$

32.



Find x
 $m\angle x = 57^\circ$

33. Two sides of a triangle are 8 and 11. What are the possible measurements of the third side?

$3 < 3^{rd} \text{ side} < 19$

34. $\angle A$ and $\angle C$ are a linear pair.

If $\angle A = 25^\circ$ then $\angle C$?
 $m\angle C = 180^\circ - 25^\circ = 155^\circ$

35. $\triangle ABC \cong \triangle DEF$, $AB = 10$ feet, $m\angle C = 50^\circ$ and $m\angle B = 43^\circ$. Find (a) $\angle D$ and (b) DE



36. If $A = (-3, 2)$ and $B = (4, 5)$, find the length of AB

$AB = \sqrt{(-3-4)^2 + (2-5)^2} = \sqrt{49 + 9} = \sqrt{58}$

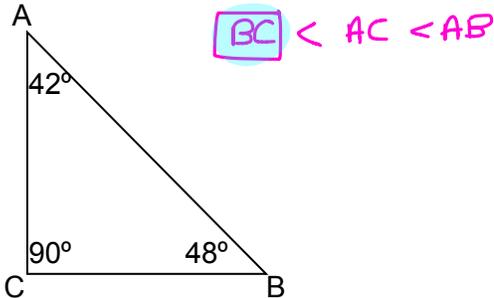
37. For the conditional statement, "If I buy Ms. Doherty presents, then she will be happy!" the underlined portion is called the ? **hypothesis**

38. Assume the following statements are true. "If I go to my geometry lesson, I will get homework. If I get homework, then I will understand the work." I didn't go to my geometry lesson. The conclusion of the syllogism is: **I will not understand the work.**

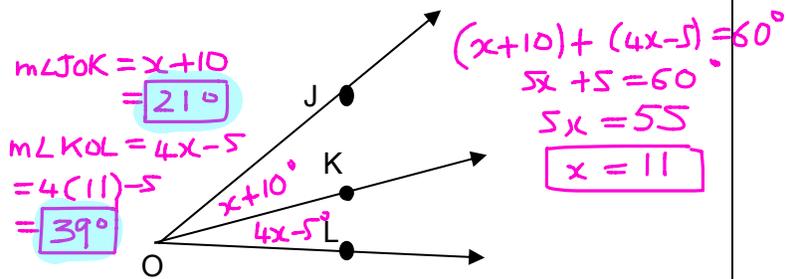
39. (A) How many points determine a plane? **3**
 (B) How many points determine a line? **2**

40. $\angle 1$ and $\angle 2$ are supplementary angles and $\angle 1$ and $\angle 3$ are vertical angles. If $m\angle 2 = 65^\circ$, then $m\angle 3 = ?$ **$180^\circ - 65^\circ = 115^\circ$**

41. Diagram not to scale. The shortest side of the triangle is:



42. If $m\angle JOK = (x+10)^\circ$ and $m\angle KOL = (4x-5)^\circ$, and $m\angle JOL = 60^\circ$. Find $m\angle JOK$ and $m\angle KOL$



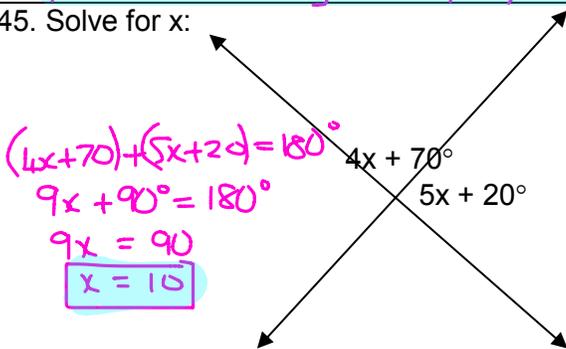
43. If I study for my semester final, then I will do well.

- (a) Find the converse of the above statement.
 (b) Find the contrapositive of the above statement.
(a) If I do well in my semester final, then I studied.
(b) If I don't do well in my semester final, then I didn't study.

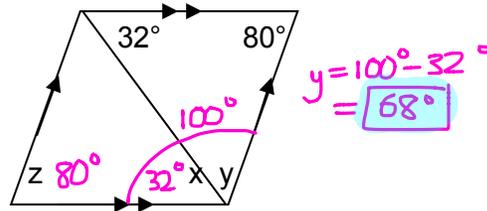
44. A pilot flies 70 miles due north and then flies $NS20^\circ W$. Draw a diagram that represents this journey.



45. Solve for x:

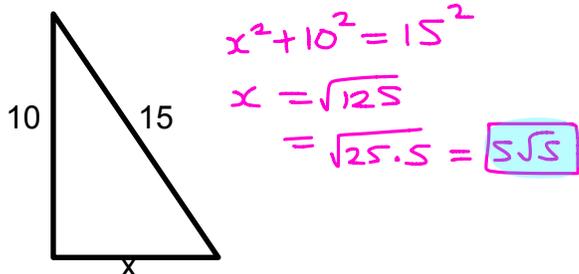


46. Find the values of the variables in the parallelogram:

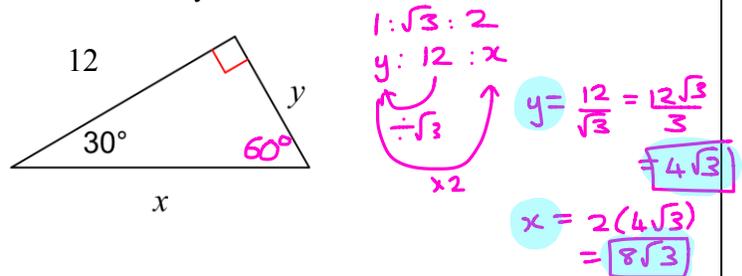


47. Define: (a) A rhombus (b) A rectangle (c) A square. Describe above using sides, angles and diagonals.

48. Find x in simplified radical form:



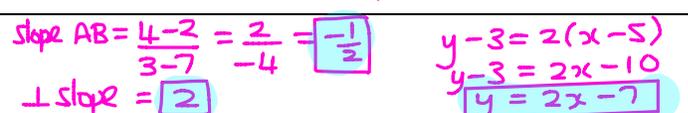
49. Find x and y.

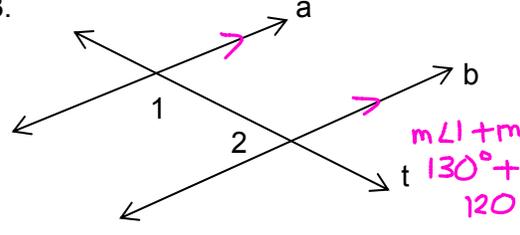
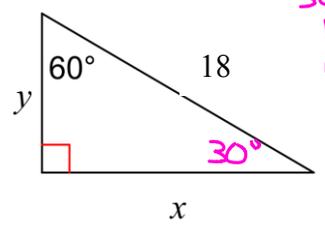
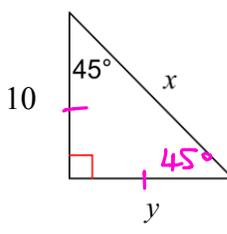


50. $\angle 1$ and $\angle 2$ are a linear pair. $m\angle 2 = 56^\circ$. $m\angle 1 = ?$



51. Find the equation of the perpendicular bisector of A = (3, 4) and B = (7, 2)



<p>52. If it is a triangle, classify it as right, obtuse or acute.</p> <p>(a) 6, 11, 17 $6+11=17$ Not a Δ</p> <p>(b) 8, 15, 17</p> <p>(c) 9, 15, 17</p> <p>(d) 7, 24, 26</p> <p>(b) $8^2+15^2=17^2$ $289=289$ Right Δ</p> <p>(c) $9^2+15^2 > 17^2$ $306 > 289$ Acute Δ</p> <p>(d) $7^2+24^2 < 26^2$ $625 < 676$ obtuse Δ</p>	<p>53.</p>  <p>$m\angle 1 + m\angle 2 = 180^\circ$ $130^\circ + (x-10) = 180^\circ$ $120 + 3x = 180^\circ$ $3x = 60^\circ$ $x = 20$</p> <p>Line a is parallel to b. If $m\angle 1 = 130^\circ$ and $m\angle 2 = (3x-10)^\circ$, find x.</p>
<p>54. Find x and y.</p>  <p>$30^\circ - 60^\circ - 90^\circ$ $1 : \sqrt{3} : 2$ $y : x : 18$ $x = 9\sqrt{3}$ $y = 9$</p>	<p>55. Find x and y.</p>  <p>$45^\circ - 45^\circ - 90^\circ$ $1 : 1 : \sqrt{2}$ $10 : y : x$ $y = 10$ $x = 10\sqrt{2}$</p>
<p>56. Draw an acute angle. Construct the angle bisector of the angle using a straight edge and a compass.</p>	<p>57. Draw a line segment. Construct the perpendicular bisector of the line segment using a straight edge and a compass.</p>
<p>58. Draw line m and a point A not on the line. Construct the parallel line to line m, through point A using a straight edge and compass.</p>	<p>59. Draw a triangle. COPY your triangle using a straight edge and compass.</p>

Review all proofs – there will be proofs on the exam

5) $y = 3x + 2$; (3, 2)

(a) parallel slope = 3
 $y - 2 = 3(x - 3)$
 $y - 2 = 3x - 9$
 $y = 3x - 7$

(b) \perp slope = $-\frac{1}{3}$
 $y - 2 = -\frac{1}{3}(x - 3)$
 $3y - 6 = -x + 3$
 $3y = -x + 9$
 $y = -\frac{1}{3}x + 3$

- 47) All are programs:
- (a) Rhombus • All sides \cong
 - opp \angle 's bisected
 - Diagonals \perp
 - (b) Rectangle • All \angle 's 90°
 - Diagonals \perp
 - (c) Square • Everything true for rhombus & rectangle.

Angle Bisector

