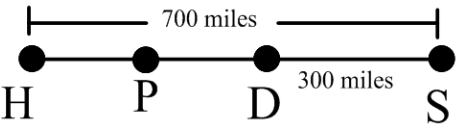
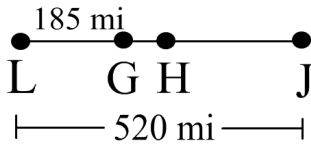
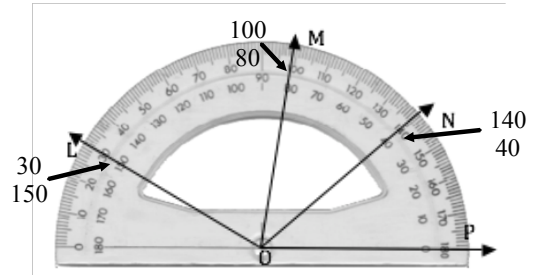
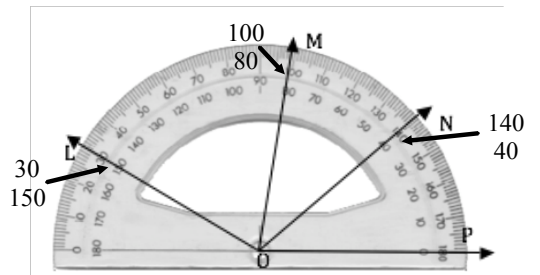
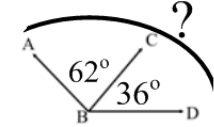
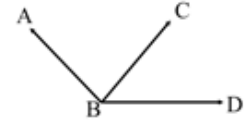


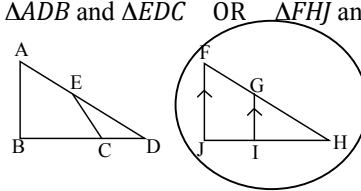
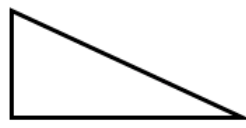


Geometry: 1st Semester Benchmark Exam
Example Sheet 1

Study Guide Problem & Solution	New Example
<p>In the diagram below, $HS = 700$ miles, $DS = 300$ miles and P is the midpoint of HD. Find PD.</p>  <p>$700 - 300 = 400$. So $HD = 400$ miles. Since P is the midpoint of HD, PD is half of HD. $400 \div 2 = 200$. $PD = 200$ miles.</p>	<p>1 In the diagram below, $LJ = 520$ miles, $LG = 185$ miles and H is the midpoint of LJ. Find GH.</p>  <p>* This is different from the study guide solution one.</p>
<p>Find the measure of $\angle LON$. Then classify the angle as acute, right, or obtuse.</p>  <p>Use either the top numbers (30° and 140°) or the bottom numbers (150° and 40°)—DON'T USE BOTH! Subtract the two numbers to find the angle measure. $140 - 30 = 110^\circ$ OR $150 - 40 = 110^\circ$ $m\angle LON = 110^\circ$. The angle is obtuse.</p>	<p>2 Find the measure of $\angle MON$. Then classify the angle as acute, right, or obtuse.</p> 
<p>$m\angle ABC = 62^\circ$ and $m\angle CBD = 36^\circ$. Find $m\angle ABD$.</p>  <p>$m\angle ABC + m\angle CBD = m\angle ABD$ $62 + 36 = 98$ $m\angle ABD = 98^\circ$.</p>	<p>3 $m\angle ABD = 107^\circ$ and $m\angle CBD = 49^\circ$. Find $m\angle ABC$.</p> 
<p>Identify the hypothesis and conclusion of the conditional statement. If I am hungry, then I eat Hypothesis: I am hungry Conclusion: I eat</p>	<p>4 Identify the hypothesis and conclusion of the conditional statement. If I am thirsty, then I drink.</p>
<p>Write the converse, inverse, and contrapositive of the conditional statement. If James is bilingual, then he can speak two languages. Converse: If James can speak two languages, then he is bilingual. Inverse: If James is not bilingual, then he can not speak two languages. Contrapositive: If James can not speak two languages, then he is not bilingual.</p>	<p>5 Write the converse, inverse, and contrapositive of the conditional statement. If a device is electronic, then it needs to be charged.</p>

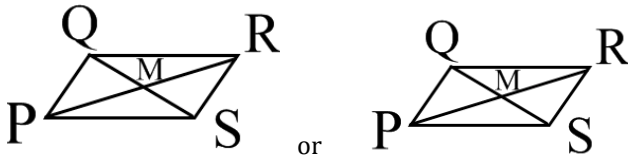
<p>Write the definition as a biconditional. A polygon is a decagon that has ten sides. Biconditional: A polygon is a decagon if and only if it has ten sides.</p>	6	<p>Write the definition as a biconditional. A segment is a bisector that cuts a figure in half.</p>
<p>If $\triangle DEF$ and $\triangle LMN$ are two triangles such that $\frac{DE}{LM} = \frac{EF}{MN}$, which angles have to be congruent in order to prove the triangles are similar?</p>  <p>If we circle $\angle E$ and $\angle M$, then it will create SAS (shown below)</p>  <p>Solution: $\angle E \cong \angle M$.</p>	7	<p>If $\triangle JKL$ and $\triangle PQR$ are two triangles such that $\frac{JL}{PR} = \frac{KL}{QR}$, which angles have to be congruent in order to prove the triangles are similar?</p>
<p>Which of the following triangle sets are similar, and how do you know?</p> <p>$\triangle ADB$ and $\triangle EDC$ OR $\triangle FHJ$ and $\triangle GHI$</p>  <p>$\triangle FHJ$ and $\triangle GHI$ are similar because \overline{FJ} and \overline{GI} are parallel.</p>	8	<p>Draw a line through the triangle that will create 2 similar triangles. What <u>must be</u> true about the line that you created and one of the sides?</p> 
<p>Show that the conjecture is false by finding a counterexample. If $x < y$, then $x + y > y - x$</p> <p>a) $x = 2, y = 5$ b) $x = 5, y = 2$ c) $x = -2, y = 5$ d) $x = 5, y = -2$</p> <p>In order to prove it false, the rule (if) MUST BE true, but the conclusion (then) MUST BE false. ($x < y$ has to be true, and $x + y > y - x$ false.)</p> <p>Plug in the numbers to choice c. If $-2 < 5$ (TRUE), then $-2 + 5 > 5 - (-2)$ $3 > 7$ (FALSE)</p> <p>Answer: c) $x = -2, y = 5$</p>	9	<p>Show that the conjecture is false by finding a counterexample. If $x < y$, then $2x + y > 2xy$</p> <p>a) $x = 3, y = 4$ b) $x = 4, y = -3$ c) $x = -4, y = -3$ d) $x = -3, y = 4$</p>
<p>Write a conditional statement from the statement. A bird has wings. Conditional statement: If it is a bird, then it has wings.</p>	10	<p>Write a conditional statement from the statement. A tiger has stripes.</p>
<p>Write the converse, inverse, and contrapositive of the conditional statement. If a triangle is equilateral, then it has 3 congruent sides.</p>	11	<p>Write the converse, inverse, and contrapositive of the conditional statement. If a figure is a parallelogram, then it has two pairs of parallel sides.</p>

Converse: If a triangle has 3 congruent sides, then it is equilateral.
Inverse: If a triangle is not equilateral, then it does not have 3 congruent sides.
Contrapositive: If a triangle does not have 3 congruent sides, then it is not equilateral.

In order to prove that a quadrilateral is a parallelogram, one pair of opposite sides must be both _____ and _____.
Answer: Congruent and parallel

In parallelogram PQRS, diagonals \overline{PR} and \overline{SQ} are drawn and intersect at point M. Which triangles, if any, MUST be congruent? Which triangles, if any, MUST be obtuse? Which triangles, if any, MUST be acute?

Can be drawn as:

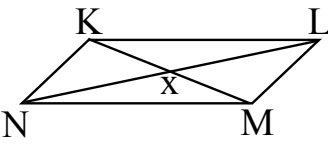


Which triangles, if any, MUST be congruent?
 $\triangle VQMR \cong \triangle VSMP$
 $\triangle VPMQ \cong \triangle VRMS$

Which triangles, if any, MUST be obtuse?
None of them MUST be obtuse.

Which triangles, if any, MUST be acute?
None of them MUST be acute.

In parallelogram KLMN, $KN = 14$, $NX = 5$, and $m\angle NKL = 107.2^\circ$. Find NL .



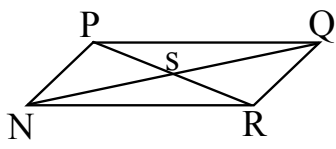
Useful info: $NX = 5$.
In parallelograms, diagonals bisect each other. $NX = XL$.
 $NX + XL = NL$
 $5 + 5 = 10$
Answer: $NL = 10$

If $\triangle PQR \cong \triangle RNP$, then $\angle PQR \cong ?$ $\angle RNP \cong ?$

12 If one pair of opposite sides is parallel, does that prove that a quadrilateral is a parallelogram? If not, what other information is necessary?

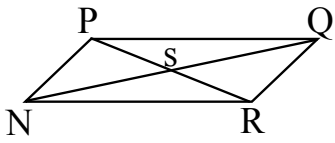
13 In parallelogram BARK, diagonals \overline{BR} and \overline{AK} are drawn and intersect at point M. Which triangles, if any, MUST be congruent? Which triangles, if any, MUST be obtuse? Which triangles, if any, MUST be acute?

14 In parallelogram PQRS, $RQ = 8$, $SQ = 9$, and $m\angle NRQ = 126.5^\circ$. Find NQ .



15 If $\triangle NKL \cong \triangle LMN$, then $\angle NKL \cong ?$ $\angle LMN \cong ?$

Name: _____ Per: _____



Answer: $\angle PQR \cong \angle RNP$
 $\angle RNP \cong \angle PQR$

