Name:_____ Period:_____ Spring Break Packet

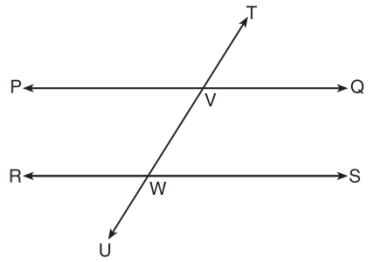
Directions: Complete this packet by Monday May 2nd 2016 in addition to this you must by a compass (To make circles). This is due Monday May 2nd 2016. If necessary do the work on a separate sheet of loose-leaf.

1) What is the midpoint of *CD* if it's endpoints are C(-8, -7) and D(2, 3)?

2) What is the distance between the points (-5, 4) and (5, 9)? Express you answer in simplest radical form.

3) If two sides of a triangle are 8 and 4, is it possible for the third side to be 18? Explain.

4) In the diagram below, transversal $\overleftrightarrow{TU}$ intersects $\overleftrightarrow{PQ}$ and $\overleftrightarrow{RS}$ at *V* and *W*, respectively.

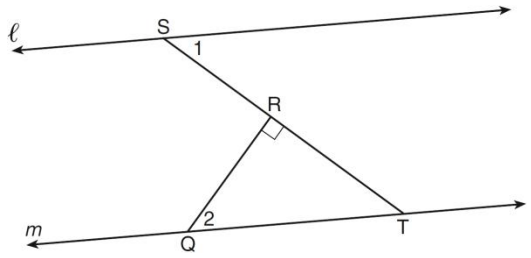


If $\mathbf{m}\angle TVQ = 5x - 22$ and $\mathbf{m}\angle VWS = 3x + 10$, for which value of *x* is $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$?

5) If the vertices of ΔABC are $A(-2,4)$, $B(-2,8)$, and $C(-5,6)$, can we classify ΔABC as scalene? Explain.

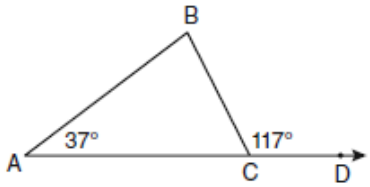
6) In ΔPQR, $PQ = 8$, $QR = 12$, and $RP = 13$. List the angles of ΔPQR in order from least to greatest.

7) In the diagram below, $\ell \parallel m$ and $\overline{QR} \perp \overline{ST}$ at *R*.



If $\mathbf{m}\angle 1 = 63$, find $\mathbf{m}\angle 2$.

8) In the diagram below of ΔABC with side $\overline{AC}$ extended through *D*, $\mathbf{m}\angle A = 37$ and $\mathbf{m}\angle BCD = 117$. Find the measure of Angle B. Which side of ΔABC is the longest side? Justify your answer.



(Not drawn to scale)

9) The angles of triangle *ABC* are in the ratio of $8:3:4$. What is the measure of the *smallest* angle?

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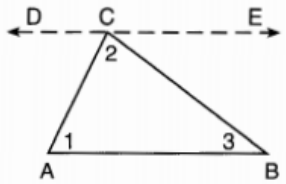
10) Can the following set of lengths represent the sides of a right triangle? Why or why not?

{16, 63, 65}

11)

Given the theorem, "The sum of the measures of the interior angles of a triangle is 180°," complete the proof for this theorem.



Given: $\triangle ABC$

Prove: $m\angle 1 + m\angle 2 + m\angle 3 = 180°$

Fill in the missing reasons below.

Statements	Reasons
(1) $\triangle ABC$	(1) Given
(2) Through point C, draw $\overleftrightarrow{DCE}$ parallel to $\overline{AB}$.	(2) _____
(3) $m\angle 1 = m\angle ACD$, $m\angle 3 = m\angle BCE$	(3) _____
(4) $m\angle ACD + m\angle 2 + m\angle BCE = 180°$	(4) _____
(5) $m\angle 1 + m\angle 2 + m\angle 3 = 180°$	(5) _____

12) What is an equation that represents the line that is perpendicular to $2y = x + 2$ and passes through the point $(4,3)$?

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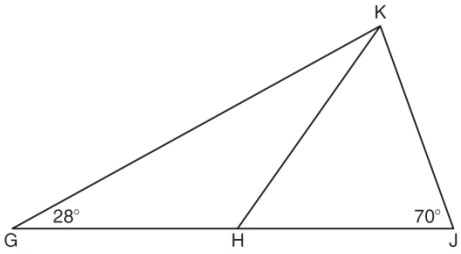
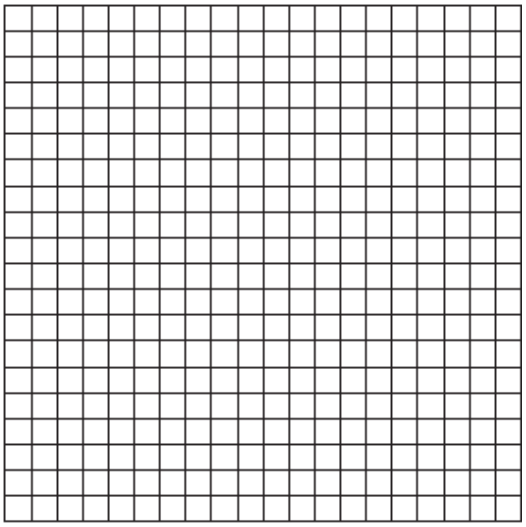
13) In the diagram below of ΔGJK, H is a point on $\overline{GJ}$, $\overline{HJ} \cong \overline{JK}$, $\mathbf{m}\angle G = 28$, and $\mathbf{m}\angle GJK = 70$. Determine whether ΔGHK is an isosceles triangle and justify your answer.

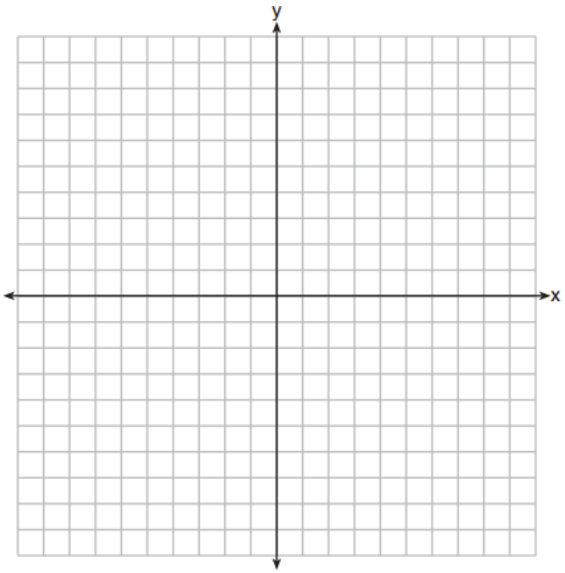


14)Jim is experimenting with a new drawing program on his computer. He created quadrilateral *TEAM* with coordinates $T(-2,3)$, $E(-5,-4)$, $A(2,-1)$, and $M(5,6)$. Jim believes that he has created a rhombus but not a square. Prove that Jim is correct. [The use of the grid is optional.]



In the coordinate plane, the vertices of $\triangle RST$ are $R(6,-1)$, $S(1,-4)$, and $T(-5,6)$. Prove that $\triangle RST$ is a right triangle. [The use of the set of axes on the next page is optional.]

15)



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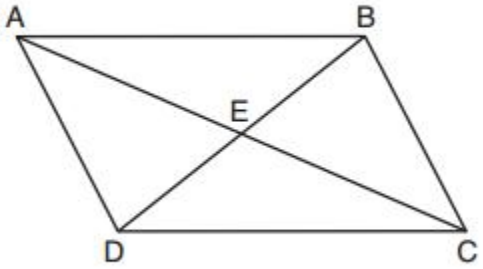
16)

Given: Quadrilateral $ABCD$ is a parallelogram with diagonals $\overline{AC}$ and $\overline{BD}$ intersecting at E



Prove: $\triangle AED \cong \triangle CEB$

17)

After a reflection over a line, $\triangle A'B'C'$ is the image of $\triangle ABC$. Explain why triangle ABC is congruent to triangle $A'B'C'$.

18)

In the diagram below of circle O, the area of the shaded sector AOC is 12π in^2 and the length of $\overline{OA}$ is 6 inches. Determine and state $m\angle AOC$.