Mr. Tu's Excellent Examples

Module 8
Architect

Applying Lesson 8.1

1. When an architect wants to identify a specific location on a drawing, he or she may use a small dot to represent this location. In terms of geometry, what does this small dot represent?

A point

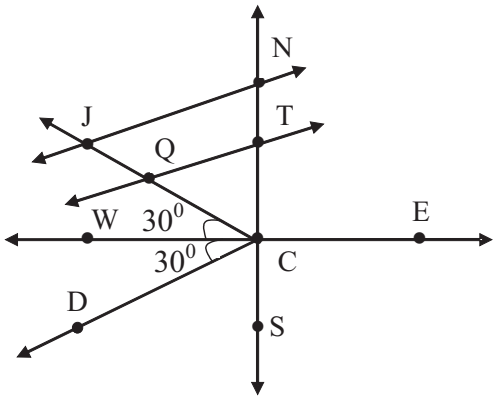
2. When showing the corridor that runs due north and south, Stephen Johnson was disregarding the fact that the earth has curvature; therefore, all the points continuing infinitely both north and south that run along the centerline of the corridor would make what geometric figure? What geometric figure would be represented by only those points contained on the centerline of the corridor within the building?

A line **A line segment**

1. On the western end of the Griffith Observatory, a point has been established from which to view the sunset. The architects placed a line segment in the concrete which begins at this point and continues along the centerline towards where the sun would be located during the winter solstice. This line segment represents a ray that travels infinitely in that direction. Another line segment begins at the same point and travels along the ray towards where the sun will set during the summer solstice. These two rays begin at the same point and form what geometric shape? If we name the point at which these rays begin V for viewing point and a point along the ray to the south W for Winter Solstice and a point along the ray to the north S for Summer Solstice, how would we name the angle that is formed by these two rays?

An angle **$\angle WVS$ or $\angle SVW$**

To answer the following questions, use the picture on the right. C is the center point, N represents due north of the center, S represents due south of the center, E represents due east of the center and W represents due west of the center.



Applying Lesson 8.2

1. What type of angle is created by the rays $\overrightarrow{CN}$ and $\overrightarrow{CE}$?

A 90^o angle or a right angle

2. What type of lines are represented by the line that travels north and south NCS and the line that travels east and west ECW?

Perpendicular lines

3. In June the sunset in Los Angeles is about 30^{o} degrees north of due west. $\overrightarrow{CJ}$ is the ray that runs towards the June sunset from the center point on the drawing. What type of angle is formed by the ray that runs due west and by the ray that runs toward the sunset in June?

An acute angle

4. In December the sunset is about 30^{o} to the south of due west. $\overrightarrow{CD}$ is the ray that runs toward the December sunset from the center point on the drawing. The angle formed between due west and the December sunset and the angle formed between due west and the June sunset are called what type of angles since their measurements are the same?

Congruent angles

Applying Lesson 8.3

1. Look at ∠WCJ and ∠JCN. Are these angles supplementary or complementary? Explain how you know?

Complementary: The measures have a sum of 90^{o}.

2. Look at ∠SCD and ∠DCN. Are these angles complementary or supplementary? Explain how you know?

Supplementary: The measures have a sum of 180^{o}.

Applying Lesson 8.4

1. If you drew a line segment from point J to point D, you would form ΔDCJ. The distances from C to D, from C to J, and from J to D are the same. What type of triangle is ΔDCJ? Why?

An equilateral triangle: All three angles measure 60^{o}.

2. If you drew a line from point N to point E you would form ΔECN. Based on the measure of ∠ECN, what type of triangle is this? Explain why.

Since ∠ECN measures 90^o, ΔECN is a right triangle.

Applying Lesson 8.5

1. If you draw a line segment from point J to point D and a line segment from point D to point S, you create ΔCJD and ΔCDS. If $\overline{CJ}$ is equal to $\overline{CS}$, what do we know about ΔCJD and ΔCDS? Justify your answer.

   The two triangles are congruent because two sides are congruent and the included angles are congruent. The two triangles are congruent by Side-Angle-Side Congruence.

2. What is the measure of ∠JCD and ∠SCD? Justify your answer.

   Both angles have a measurement of 60^o. ∠JCD is formed by combining two 30^o angles for a total of 60^o. ∠SCD is a complementary angle to a 30^o angle.

Applying Lesson 8.6

1. If $\overleftrightarrow{JN}$ is parallel to $\overleftrightarrow{QT}$, is ΔCJN similar to ΔCQT? Justify your answer.

   ΔCJN and ΔCQT are similar triangles. Because $\overleftrightarrow{JN}$ and $\overleftrightarrow{QT}$ are parallel, then ∠CJN and ∠CQT are congruent and ∠CNJ and ∠CTQ are congruent. According to the AA Similarity Rule, these triangles are similar.