

Day 09: Unit 2 Test Review

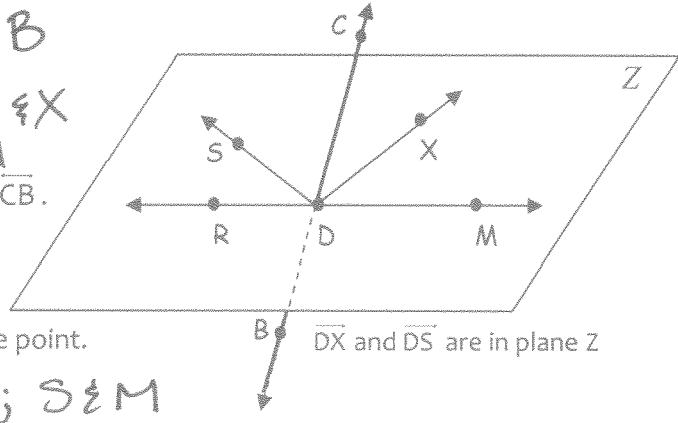
Foundations of Geometry

Name Master E
 Date _____ Block _____

Skill Set 1: Students will be able to determine the relationships between points, lines and planes and determine whether points are collinear, non-collinear, coplanar or non-coplanar.

1-9: Use the picture at the right to answer each question. *There are multiple answers possible

- *1. R, D, & M Name 3 collinear points. C, D, & B
 *2. R, D, & S Name 3 non-collinear points. S, D, & X
X, D, & M, S, D, & M
 3. D Name the intersection of plane Z and \overline{CB} .
 \overleftrightarrow{RM}
 4. \overleftrightarrow{CB} Name a line intersecting plane Z in one point.



- *6. R, D, S, and X are coplanar points. X & M; S & M
 *7. R, D, S, and C are non-coplanar points; S & B; X & C; X & B
 8. If two lines intersect (\overline{RM} and \overline{CB}), then their intersection is a point (D)
 9. If two planes intersect, then their intersection is a line.

Skill Set 2: Students will be able to determine the length of a line segment, distance and midpoint given two points, and use the Segment Addition Postulate.

10-14: Given coordinates P = -15, Q = -12, R = 0, S = 3, and T = 7, find each answer using the number line.

10. 18 Find PS. $|3 - (-15)| = 18$
 11. -6 Find the coordinate of the midpoint of \overline{PS} . $\frac{-15 + 3}{2} = \frac{-12}{2} = -6$
 12. RS Name a segment on the number line that is congruent to \overline{PQ} . $PQ = 3$, so it is \overline{RS}
 13. 26 If T is the midpoint of \overline{QV} , then find the coordinate of V. $\frac{-12 + x}{2} = 7 \Rightarrow -12 + x = 14 \Rightarrow x = 26$
 14. PR Use the Segment Addition Postulate to complete: $PQ + QR =$ 15.

15: If point S is between points R and T and S is the midpoint of \overline{RT} , label the segment, find the value of x and the measures of \overline{ST} and \overline{RS} .
 Given: $RT = 28$ and $ST = 5x - 6$.

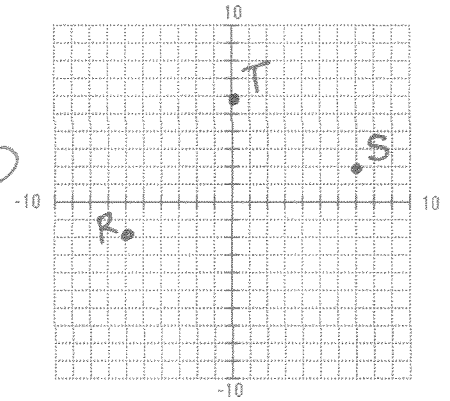
15. $x =$ 4 $2(5x - 6) = 28$
 $ST =$ 14 $5(4) - 6 = 14$
 $RS =$ 14 $10x - 12 = 28$
 $10x = 40$
 $x = 4$

16: On a coordinate plane, you must be able to find the length of a segment and the coordinates of its midpoint or its endpoint using the Distance or Midpoint Formula. Fill in the formulas below.

$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) = (x_3, y_3)$

17-20: Given coordinates R(-6, -2), S(7, 2), and T(0, 6), use the graph AND the correct formulas to find each. Show detailed work using the formulas to avoid careless errors!

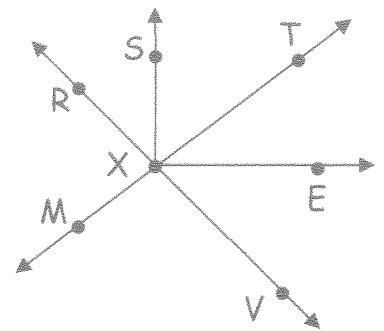
17. 10 Find RT. $\sqrt{(0-(-6))^2 + (6-(-2))^2} = \sqrt{(6)^2 + (8)^2}$
 $\sqrt{36+64}$
 $\sqrt{100}=10$
18. $\sqrt{185} \approx 13.6$ Find RS. $\sqrt{(7-(-6))^2 + (2-(-2))^2}$
 $\sqrt{(13)^2 + (4)^2} = \sqrt{169+16}$
 $\sqrt{185} \approx 13.6$
19. (-3, 2) Find the midpoint of \overline{RT} . $(\frac{-6+0}{2}, \frac{-2+6}{2})$
20. (6, 14) If T is the midpoint of \overline{RP} , then find the coordinate of P.
 $-\frac{6+x}{2} = 0$ $-\frac{2+y}{2} = 6$
 $-\frac{6+x}{2} = 0$ $-\frac{2+y}{2} = 12$
 $x = -6$ $y = 14$



Skill Set 3: Students will be able to identify the parts of an angle, including the sides and vertex, classify angles by size, describe angle pair relationships (including linear pair, vertical angles, complementary, and supplementary) and apply the Angle Addition Postulate.

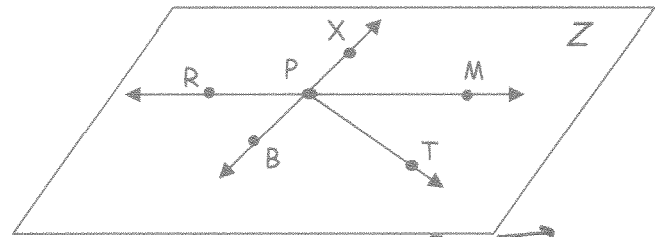
21-25: In the given picture, if $\overline{MT} \perp \overline{RV}$, and $\overline{XS} \perp \overline{XE}$, identify each pair of angles as adjacent, vertical, complementary, supplementary, and/or a linear pair. State ALL that apply.

21. vertical $\angle MXR$ and $\angle TXV$
22. adjacent, linear pair, & supp. $\angle MXR$ and $\angle VXM$
23. adjacent & complementary $\angle SXT$ and $\angle TXE$
24. adjacent $\angle RXS$ and $\angle SXE$
25. adjacent, linear pair, & supp. $\angle TXE$ and $\angle MXE$



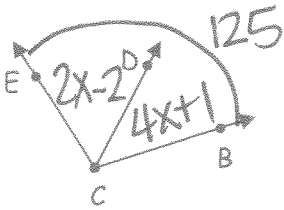
26-34: Use the picture with plane Z to answer each question.

26. R or B Name a point in the exterior of $\angle TPX$.
27. If \overline{PT} bisects $\angle BPM$, then $\angle \underline{MPT} \cong \angle \underline{TPB}$.
28. $m\angle RPX + m\angle XPM = m\angle \underline{RPM}$.
29. $\angle TPM$ Name an angle adjacent to $\angle BPT$.
30. \overrightarrow{PR} , \overrightarrow{PM} or \overrightarrow{PB} & \overrightarrow{PX} Name a pair of opposite rays.
31. \overrightarrow{PR} , \overrightarrow{PB} Name the sides of $\angle RPB$.
32. $\angle MPX$ and $\angle \underline{XPR}$ or $\angle \underline{BPM}$ are a linear pair.
33. Another name for $\angle BPR$ is $\angle \underline{RPB}$.
34. M Name a point in the interior of $\angle XPT$.



35-39: Use the picture and the given information to find each value. Show all work used to derive your answer. Mark/label the picture, write and solve an equation, and fill in the answers.

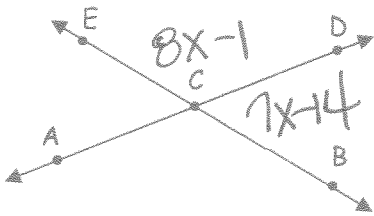
35. If $m\angle ECB = 125^\circ$, $m\angle ECD = 2x - 2$, and $m\angle DCB = 4x + 1$, then find each value.



$$\begin{aligned} 2x - 2 + 4x + 1 &= 125 \\ 6x - 1 &= 125 \\ 6x &= 126 \\ x &= 21 \end{aligned}$$

$$\begin{aligned} x &= \underline{21} \\ m\angle ECD &= \underline{40^\circ} \quad 2(21) - 2 \\ m\angle DCB &= \underline{85^\circ} \quad 4(21) + 1 \end{aligned}$$

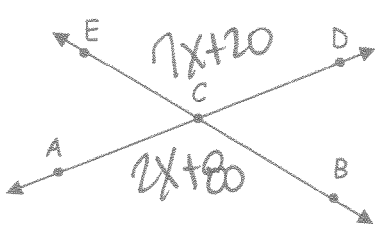
36. If $m\angle ECD = 8x - 1$ and $m\angle DCB = 7x - 14$, then find each value.



$$\begin{aligned} 8x - 1 + 7x - 14 &= 180 \\ 15x - 15 &= 180 \\ 15x &= 195 \\ x &= 13 \end{aligned}$$

$$\begin{aligned} x &= \underline{13} \\ m\angle ECD &= \underline{103^\circ} \quad 8(13) - 1 \\ m\angle DCB &= \underline{77^\circ} \quad 7(13) - 14 \end{aligned}$$

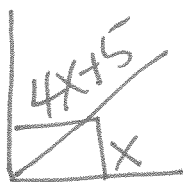
37. If $m\angle ECD = 7x + 20$ and $m\angle DCB = 2x + 80$, then find each value.



$$\begin{aligned} 7x + 20 &= 2x + 80 \\ 5x + 20 &= 80 \\ 5x &= 60 \\ x &= 12 \end{aligned}$$

$$\begin{aligned} x &= \underline{12} \\ m\angle ECD &= \underline{104^\circ} \quad 7(12) + 20 \\ m\angle DCB &= \underline{76^\circ} \quad 2(12) + 80 \end{aligned}$$

38. Two angles are complementary. One angle has a measure that is 5 more than 4 times the measure of the other angle. What is the measure of the larger angle? Draw a picture, label the parts, and solve.



$$\begin{aligned} 4x + 5 + x &= 90 \\ 5x + 5 &= 90 \\ 5x &= 85 \\ x &= 17 \end{aligned}$$

$$\begin{aligned} \text{Large } \angle &= \underline{73^\circ} \\ \text{Complement} &= \underline{17^\circ} \end{aligned}$$

$$4(17) + 5 = 73$$

39. Two angles are supplementary. One angle has a measure that is 12 less than 2 times the measure of the other angle. What is the measure of the larger angle? Draw a picture, label the parts, and solve.



$$\begin{aligned} 2x - 12 + x &= 180 \\ 3x - 12 &= 180 \\ 3x &= 192 \\ x &= 64 \end{aligned}$$

$$\begin{aligned} \text{Large } \angle &= \underline{116^\circ} \\ \text{Complement} &= \underline{64^\circ} \end{aligned}$$

$$2(64) - 12 = 116$$

Skill Set 4: Students will be able to create and identify constructions made with segments, angles and planes.

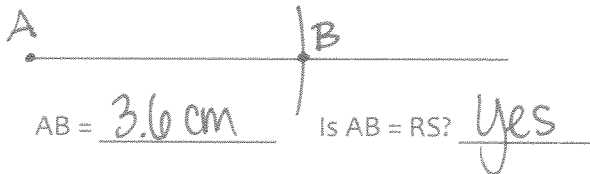
40-46: Construct each problem and measure the given and constructed segments and angles to verify your construction. Arc marks must be clearly seen to justify that you are constructing and not just using the ruler!



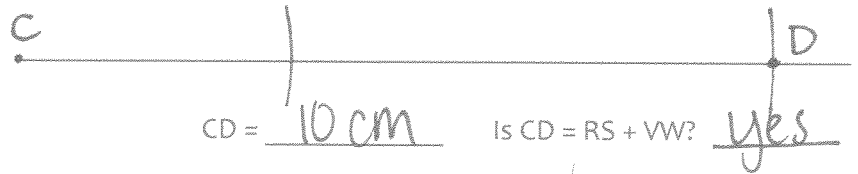
$RS = 3.6 \text{ cm}$

$VW = 6.4 \text{ cm}$

40. Construct $\overline{AB} \cong \overline{RS}$.

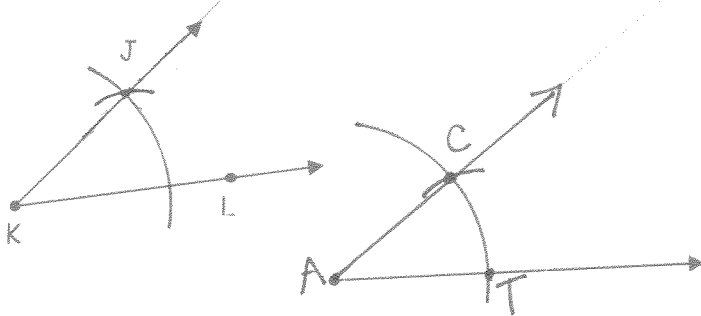


41. Construct \overline{CD} where $CD = RS + VW$.



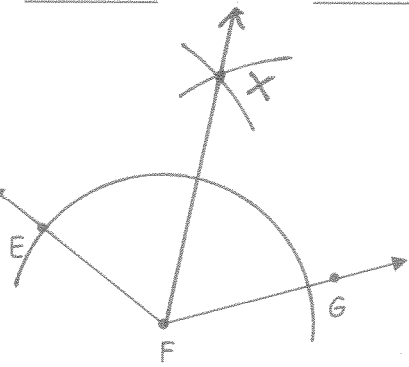
42. Construct $\angle CAT \cong \angle JKL$ on the given ray.

$m\angle JKL = 38^\circ$ $m\angle CAT = 38^\circ$



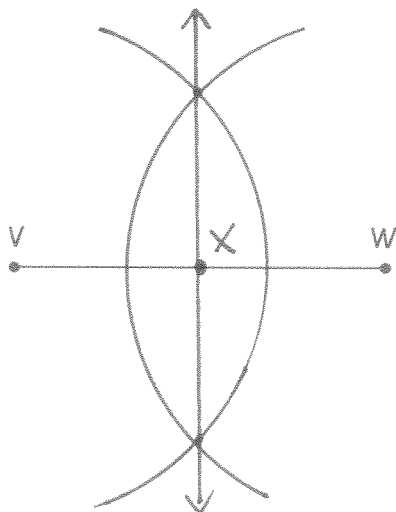
43. Construct \overline{FX} bisecting $\angle EFG$.

$m\angle EFG = 127^\circ$ $m\angle EFX = 63.5^\circ$

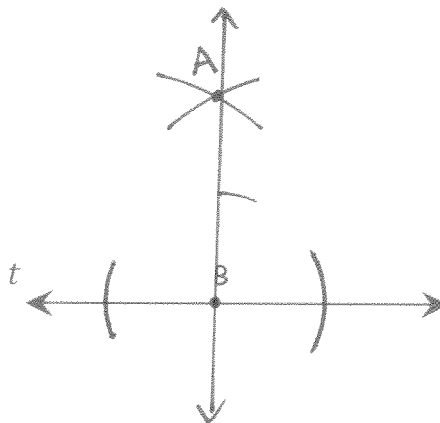


44. Construct \overline{RP} bisecting \overline{VW} at X.

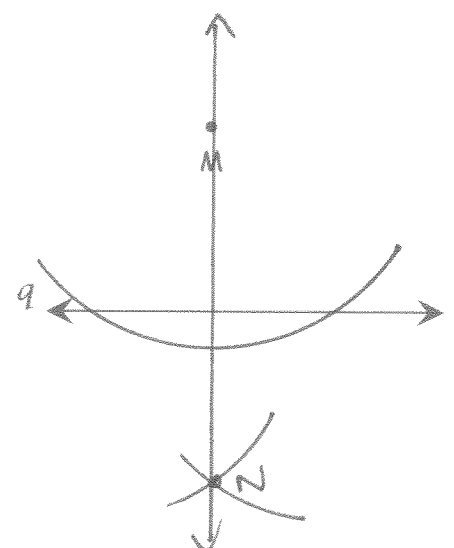
$VW = 4.9 \text{ cm}$ $VX = 2.45 \text{ cm}$



45. Construct $\overline{AB} \perp$ line t.



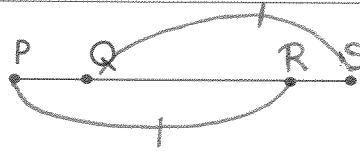
46. Construct $\overline{MN} \perp$ line q.



Skill Set 5: Students will be able to use segment and angle relationships to complete a 2-column proof.

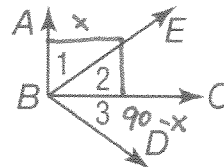
47-48: Complete the segment and angle proofs with the correct statements or reasons.

47. **Given:** $\overline{PR} \cong \overline{QS}$
Prove: $\overline{PQ} \cong \overline{RS}$



Statements	Reasons
a. $\overline{PR} \cong \overline{QS}$	a. <u>Given</u>
b. $PR = QS$	b. <u>Def. \cong segments</u>
c. $PQ + QR = PR$	c. <u>Segment + Post.</u>
d. $QR + RS = QS$	d. <u>Segment + Post.</u>
e. $PQ + QR = QR + RS$	e. <u>Substitution POE</u>
f. <u>$PQ = RS$</u>	f. Subtraction Property of Equality
g. <u>$\overline{PQ} \cong \overline{RS}$</u>	g. Definition of Congruent Segments

48. **Given:** $\overline{AB} \perp \overline{BC}$, $\angle 1$ and $\angle 3$ are complementary.
Prove: $\angle 2 \cong \angle 3$



Statements	Reasons
a. $\overline{AB} \perp \overline{BC}$	a. <u>Given</u>
b. <u>$\angle ABC$ is a right \angle</u>	b. Definition of Perpendicular Lines
c. $m\angle ABC = 90$	c. <u>Def. right \angle</u>
d. $m\angle ABC = m\angle 1 + m\angle 2$	d. <u>\angle + Post.</u>
e. $90 = m\angle 1 + m\angle 2$	e. Substitution Property of Equality
f. $\angle 1$ and $\angle 2$ are complementary	f. <u>Def. comp. \angles</u>
g. <u>$\angle 1$ & $\angle 3$ are comp.</u>	g. Given
h. $\angle 2 \cong \angle 3$	h. <u>Complements of the same \angle are \cong (Theorem)</u>