Review of Standards 7, 8 & 9

Name: KEY

(1) Please show all the steps and justifications for solving the problem:

$3(2x - 9) + 11 = 10x - 28$	Given
$6x - 27 + 11 = 10x - 28$	Distributive Prop
$6x - 16 = 10x - 28$	Simplify
$-16 = 4x - 28$	Subtraction Prop of = $(6x)$
$12 = 4x$	Add. Prop of = (28)
$3 = x$	Division Prop of = (4)
$x = 3$	Symmetric Prop of =

(2) Complete the reasons in the following proof:

GIVEN: B is the midpoint of $\overline{AC}$

PROVE: AC = 2AB

Statements:	Reasons:
1. B is the midpoint of $\overline{AC}$	1. Given
2. $\overline{AB} \cong \overline{BC}$	2. Def. Midpoint
3. $AB = BC$	3. Def. $\cong$
4. $AC = AB + BC$	4. Segment Add. Post.
5. $AC = AB + AB$	5. Substitution $(3 \rightarrow 4)$
6. $AC = 2AB$	6. Simplify

(3) Identify the property illistrated:

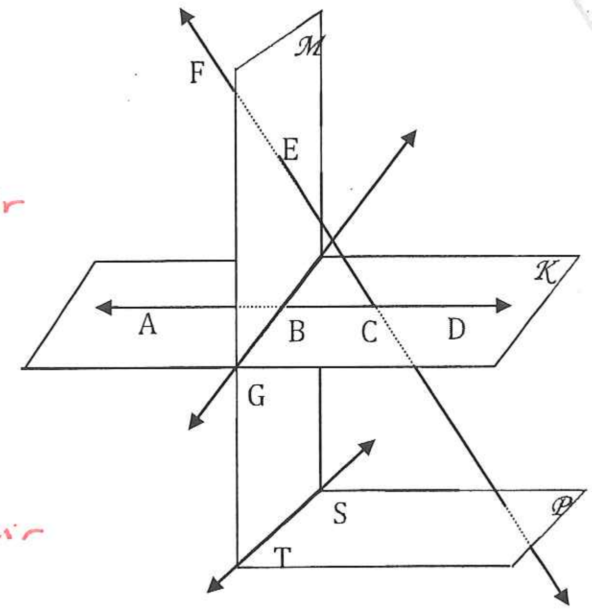
a) If $\angle EFG \cong \angle BHQ$, then $\angle BHQ \cong \angle EFG$ — Symmetric Prop of $\cong$ (angles)

b) If a = b and c = b, then a = c — Substitution Prop of =
(or symmetric + transitive)

c) $\overline{AC} \cong \overline{CA}$ — Reflexive Prop of $\cong$ (segments)

d) If TY = RX, than TY + (-5) = RX + (-5) — Addition Prop of = (-5)

(4) Decide which postulate justifies the following conclusions.



a) The intersection of plane **M** and plane **K** is $\overleftrightarrow{GB}$.

If two planes intersect, then their intersection is a line.

b) $\overleftrightarrow{CA}$ is the only line that contains both C and A.

Through any two points there is exactly one line.

c) The only point of intersection of $\overleftrightarrow{FE}$ and $\overleftrightarrow{AB}$ is point C.

If two lines intersect, then their intersection is a point.

d) Even though it is not shown in the diagram, $\overleftrightarrow{EB}$ must lie entirely in plane **M**.

If two points lie in a plane, the line containing them must also lie in the same plane.

e) There is one and only one plane that could be drawn that contains points A, D and E.

Through any 3 non-collinear points there is exactly one plane.

f) On plane **P**, there is at least one other point besides S and T.

A plane contains at least 3 non-collinear points.

(5) Using the diagram from problem (4) determine whether you CAN or CANNOT assume the following:

a) $\overleftrightarrow{GB}$ and $\overleftrightarrow{ST}$ are not parallel. CANNOT assume

b) $\overleftrightarrow{GT}$ and $\overleftrightarrow{ST}$ are not parallel. CAN assume (you can see they intersect)

c) Points E, B and D are coplanar. CAN assume (by postulate)

d) ∠ECB is not a right angle. CANNOT assume

e) Points A, B, C and D are collinear. CAN assume (can see line that contains them)

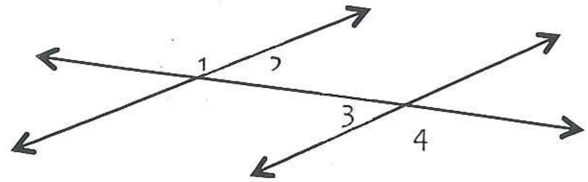
(6) A friend tells you the Linear Pair Postulate is useless, because the definition of supplementary angles says the same thing. Do you agree? Explain either why they are both necessary, or why they are the same.

They each do something different!

Def. supplementary: supplementary $\rightleftarrows$ 180°

Linear Pair Post: Linear Pair $\rightarrow$ supplementary

(8) **Given:** $\angle 1 \cong \angle 4$
Prove: $\angle 2 \cong \angle 3$



Statements:	Reasons:
1. ∡1 ≅ ∡4	1. Given
2. ∡1 and ∡2 are supp ∡3 and ∡4 are a linear pr.	2. Def. Linear Pair (see diagram)
3. ∡1 and ∡2 are supp ∡3 and ∡4 are supp	3. Linear Pair Post.
4. ∡2 ≅ ∡3.	4. Congruent Supp Thm

(9) Decide whether the following situations could occur:

a) Two planes are vertical and they do not intersect.
YES (parallel planes)

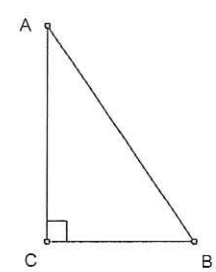
b) Two planes are vertical and they intersect.
YES ("pages of a book")

c) Two planes are horizontal and they do not intersect.
YES (parallel planes)

d) Two planes are horizontal and they intersect.
NO! (always same plane)

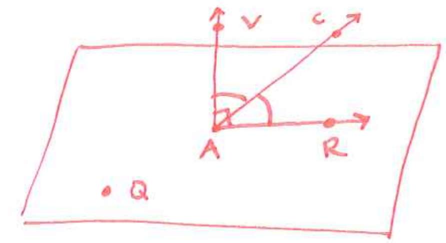
(10) **Given:** $m\angle A + m\angle B + m\angle C = 180$
$\angle C$ is a right angle

Prove: $\angle A$ and $\angle B$ are complementary



Statements:	Reasons:
1. m∡A + m∡B + m∡C = 180 ∡C is a right angle	1. Given
2. m∡C = 90	2. Def. Right ∡
3. m∡A + m∡B + 90 = 180	3. Substitution (2 → 1a)
4. m∡A + m∡B = 90	4. Subtraction Prop of = (90°)
5. ∡A and ∡B are complementary	5. Def. Complementary

(11)



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