

Fill in the blank for each sentence to make a true statement.

- If  $RS = 12$  and  $12 = XY$ , then  $RS = XY$  because of the transitive property.
- Statements accepted as true without proof are called postulates.
- Statement that can be proved are called theorems.
- If  $\angle A$  is a supplement of  $\angle B$  and  $\angle C$  is a supplement of  $\angle B$ , then  $\angle A \cong \angle C$ .
- Write the converse of the conditional below and then evaluate if it is true or false. If false, provide a counterexample.

Conditional: If two angles are supplements of  $\cong$  angles, then the two angles are  $\cong$ .

Converse: If  $\angle$ 's are  $\cong$ , then they are supplements of  $\cong \angle$ 's

True or False? true

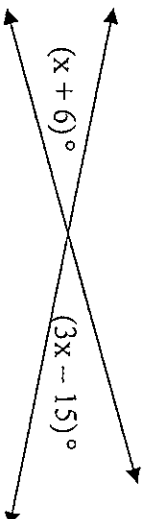
6. Find the value of  $x$ .

$$3x - 15 = x + 6$$

$$2x = 21$$

$$x = \frac{21}{2}$$

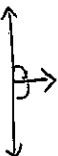
6.  $\frac{21}{2} = 10.5$



7. Fill in always, sometimes, or never to make the statement true.

Congruent supplementary angles are

always ~~sometimes~~ ~~never~~ right angles.



8. If  $m\angle A = 63$ , find the supplement of the complement of  $\angle A$ .

$$90 - 63 = 27$$

$$180 - 27 = 153$$

8. 153

9. The complement of an angle is twenty-four more than twice the measure of the angle. Find the measure of the angle and its complement.

$$90 - x = 24 + 2x$$

$$66 = 3x$$

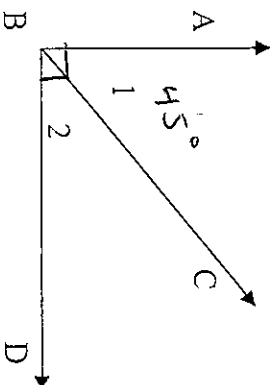
$$22 = x$$

9. 22/68

Write a 2-column deductive proof.

14. Given:  $\overline{BA} \perp \overline{BD}$ ,  $m\angle 1 = 45$

Prove:  $\overline{BC}$  bisects  $\angle ABD$



Statements

Reasons

1. $\overline{BA} \perp \overline{BD}$	1. Given
2. $\angle 1 + \angle 2$ are complem.	2. If pt. status of 2 adj. acute $\angle$ 's, then the 2 are compl.
3. $m\angle 1 + m\angle 2 = 90$	3. Def. Compl.
4. $m\angle 1 = 45$	4. Given
5. $45 + m\angle 2 = 90$	5. Substitution
6. $m\angle 2 = 45$	6. Subtr. prop. =
7. $m\angle 1 = m\angle 2$	7. Substitution
8. $\angle 1 \cong \angle 2$	8. def. $\cong$
9. $\overline{BC}$ bisects $\angle ABD$	9. def. of $\angle$ bisector

15. Provide a counterexample for the conditional: If  $x^2 = 36$ , then  $x = 6$ .  $x = -6$

Use the diagram and the given information to answer each question below.

$\overline{MQ}$ ,  $\overline{TP}$ ,  $\overline{SO}$ ,  $\overline{RN}$  all intersect at X,  $m\angle NXO = 25$ ,  $m\angle SXT = 32$

16.  $m\angle NXO = 25$       21.  $m\angle OXR = 155$
17.  $m\angle OXP = 32$       22.  $m\angle SXN = 155$
18.  $m\angle RXT = 57$       23.  $\angle MXN \cong$  not enough info.
19.  $m\angle SXQ =$  not enough info.      24.  $\angle TXM \cong$  not enough info.
20.  $m\angle TXO = 148$       25.  $\angle SXM \cong$  not enough info.

