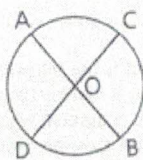


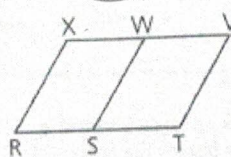
1 Name the congruent segments.

a O is the midpoint of  $\overline{CD}$ .



$\overline{CO} \cong \overline{OD}$   
(NOT  $\overline{AO} \cong \overline{OB}$ )

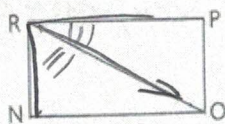
b  $\overline{SW}$  bisects  $\overline{XV}$ .



$\overline{XW} \cong \overline{WV}$   
(NOT  $\overline{RS} \cong \overline{ST}$ )

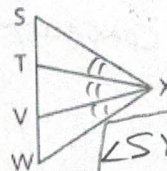
2 Name the congruent angles.

a  $\overrightarrow{RO}$  bisects  $\angle NRP$ .



$\angle NRO \cong \angle PRO$

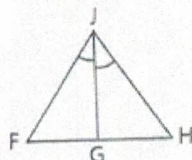
b  $\overrightarrow{XT}$  and  $\overrightarrow{XV}$  trisect  $\angle SXW$ .



$\angle SXT \cong \angle TXV \cong \angle VXW$

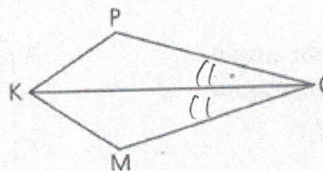
3 Name the angle bisector.

a



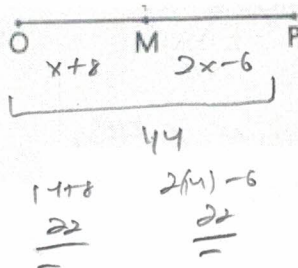
$\overrightarrow{JG}$  BISECTS  $\angle FJH$

b  $m\angle POK = m\angle MOK$



$\overrightarrow{OK}$  BISECTS  $\angle POM$

6 Given:  $OM = x + 8$ ,  
 $MP = 2x - 6$ ,  
 $OP = 44$



$$x + 8 + 2x - 6 = 44$$

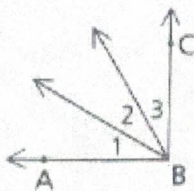
$$3x = 42$$

$$x = 14$$

Is M the midpoint of  $\overline{OP}$ ?

YES.  $\overline{OM} \cong \overline{MP}$ .

9 Given:  $\angle ABC = 90^\circ$ ,  
 $\angle 1 = (2x + 10)^\circ$ ,  
 $\angle 2 = (x + 20)^\circ$ ,  
 $\angle 3 = (3x)^\circ$



$$2x + 10 + x + 20 + 3x = 90$$

$$6x = 60$$

$$x = 10$$

Has  $\angle ABC$  been trisected?

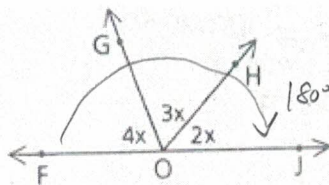
$$2(10) + 10 = 30^\circ$$

$$10 + 20 = 30^\circ$$

$$3(10) = 30^\circ$$

YES.  $\angle 1 \cong \angle 2 \cong \angle 3$

18  $\overrightarrow{OG}$  and  $\overrightarrow{OH}$  divide straight angle FOJ into three angles whose measures are in the ratio 4:3:2. Find  $m\angle FOG$ .



$$4x + 3x + 2x = 180$$

$$9x = 180$$

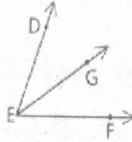
$$x = 20$$

$$m\angle FOG = 4(20)$$

$m\angle FOG = 80^\circ$

In problems 10 and 11, reason 2 in each proof is stated incorrectly. Supply the correct final reason for each problem.

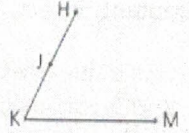
- 10 Given:  $\angle DEG \cong \angle FEG$   
 Prove:  $\overrightarrow{EG}$  bisects  $\angle DEF$ .



Statements	Reasons
1 $\angle DEG \cong \angle FEG$	1 Given
2 $\overrightarrow{EG}$ bisects $\angle DEF$ .	2 If a ray divides an angle into two angles, the ray bisects the angle. (What is the correct reason?)

CONGRUENT

- 11 Given:  $KJ \cong HJ$   
 Prove: J is the midpoint of  $\overline{HK}$ .

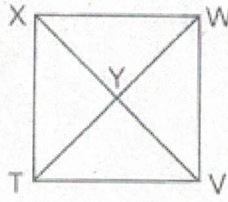


Statements	Reasons
1 $KJ \cong HJ$	1 Given
2 J is the midpoint of $\overline{HK}$ .	2 If a point is the midpoint of a segment, it divides the segment into two congruent segments. (What is the correct reason?)

CONVERSE (FLIP)

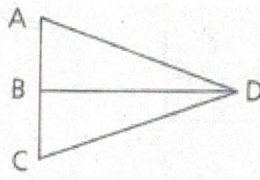
IF  $\cong$  SEGMENTS, THEN MIDPOINT.

- 16 Given:  $\angle TXW$  is a right angle.  
 $\angle TYV$  is a right angle.  
 Prove:  $\angle TXW \cong \angle TYV$



S	R
1) $\angle TXW$ RT. ANGLE	1) GIVEN
2) $\angle TYV$ RT. ANGLE	2) GIVEN
3) $\angle TXW \cong \angle TYV$	3) IF 2 ANGLES RT. ANGLES, THEN THEY ARE $\cong$ .

- 17 Given: B is the midpoint of  $\overline{AC}$ .  
 Prove:  $\overline{AB} \cong \overline{BC}$



S	R
1) B MIDPOINT $\overline{AC}$	1) GIVEN
2) $\overline{AB} \cong \overline{BC}$	2) IF A POINT IS A MIDPOINT, THEN IT DIVIDES SEGMENT INTO 2 $\cong$ SEGMENTS.