# Chapter 2 Test Review

1)

**9.** An object weighs one ton if it weighs 2000 pounds.

If an object weighs 2000 pounds, then it weighs one ton.

**10.** An object weighs 16 ounces if it weighs one pound.

If an object weighs one pound, then it weighs 16 ounces.

**11.** Three points are collinear if they lie on the same line.

If three points lie on the same line, then they are collinear.

2)

**14.** A point may lie in more than one plane.

True

**15.** If $x^4$ equals 81, then $x$ must equal 3.

False, x could = -3

**16.** If it is snowing, then the temperature is below freezing.

True

## 3)

**18.** If $\angle 1$ measures $123°$, then $\angle 1$ is obtuse.

Converse: If <1 is obtuse, then <1 measures 123*. Inverse: If <1 doesn't measure 123*, then <1 is not obtuse. Contrap.: If <1 is not obtuse, then <1 doesn't measure 123*

**19.** If $\angle 2$ measures $38°$, then $\angle 2$ is acute.

Converse: If <2 is acute, then <2 measures 38*. Inverse: If <2 doesn't measure 38*, then <2 is not acute. Contrap.: If <2 is not acute, then <2 doesn't measure 38*.

**20.** I will go to the mall if it is not raining.

If it is not raining, then I will go to the mall.

Converse: If I go to the mall, then it is not raining. Inverse: If it is raining, then I will not go to the mall. Contrap.: If I do not go to the mall, then it is raining.

4)
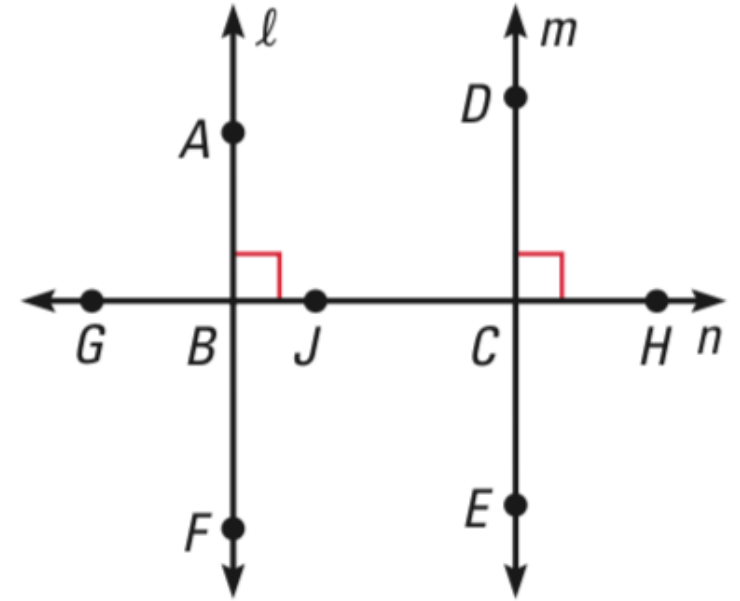


**13.** Points $A$, $F$, and $G$ are collinear.  F

**14.** $\angle DCJ$ and $\angle DCH$ are supplementary.  T

**15.** $\overline{DC}$ is perpendicular to line $\ell$.  F

**16.** $\overline{FB}$ is perpendicular to line $n$.  T

5)

**20.** Two angles are congruent if and only if they have the same measure.

Conditional: If two angles are congruent, then they have the same measure.
Converse: If two angles have the same measure, then they are congruent.

**21.** A ray bisects an angle if and only if it divides the angle into two congruent angles.

Conditional: If a ray bisects an angle, then it divides the angle into two congruent angles.
Converse: If a ray divides the angle into two congruent angles, then it bisects the angle.

6)

**24.** If an angle measures 94°, then it is obtuse.

The angle could be any other number greater than 90 and less than 180
    (100, 120, …)

**25.** If two angles measure 42° and 48°, then they are complementary.

The angles could be 30* and 60*

**26.** If Terry lives in Tampa, then she lives in Florida.

She could live in another city in Florida (Orlando, Clear Water, …)

7)

**33.** Two circles have the same circumference <mark>if</mark> they have the same diameter.

If two circles have the same diameter, then they have the same circumference.
Converse: If two circles have the same circumference, then they have the same diameter.
        TRUE
Biconditional: Two circles have the same diameter if and only if they have the same circumference.

**34.** The perimeter of a triangle is the sum of the lengths of its sides.

If a number is the perimeter of a triangle, then it is the sum of the lengths of its sides.
Converse: If a number is the sum of the lengths of its sides, then it is the perimeter of the triangle. TRUE
Biconditional: A number is the perimeter of a triangle if and only if it is the sum of the lengths of its sides.

**35.** All leopards have spots.

If an animal is a leopard, then it has spots.
Converse: If an animal has spots, then it is a leopard. FALSE
C.E.: Cheetah

8) $p$: Points $X$, $Y$, and $Z$ are collinear.

$q$: Points $X$, $Y$, and $Z$ lie on the same line.

**8.** $q \rightarrow p$

If points X, Y, and Z lie on the same line, then points X, Y, and Z are collinear.

**9.** $\sim q$

Points X, Y, and Z do not lie on the same line.

**10.** $\sim p$

Points X, Y and Z are not collinear.

**11.** $\sim p \rightarrow \sim q$

If points X, Y, and Z are not collinear, then points X, Y, and Z are not on the same line.

9)

**14.** If Jed gets a C on the exam, then he will get an A for the quarter.

P: Jed gets a C on the exam; Q: He will get an A for the quarter.
Inverse: ~p → ~q; If Jed doesn't get a C on the exam, then he will not get an A...
Contrap.: ~q → ~p; If he doesn't get an A..., then he didn't get a C on the exam.

**15.** If Alberto finds a summer job, then he will buy a car.

P: Alberto finds a summer job; Q: He will buy a car.
Inverse: ~p → ~q; If Alberto doesn't find a summer job, then he won't buy a car.
Contrap.: ~q → ~p; If Alberto doesn't buy a car, then he didn't find a summer job.

**16.** If the fuse has blown, then the light will not go on.

P: The fuse has blow; Q: The light will not go on.
Inverse: ~p → ~q; If the fuse has not blown, then the light will go on.
Contrap.:~q → ~p; If the light will go on, then the fuse has not blown.

## 10)

**30.** If the sun is shining, ~~then it is a beautiful day~~.

~~If it is a beautiful day,~~ then we will have a picnic.

If the sun is shining, then we will have a picnic.

**31.** If the stereo is on, ~~then the volume is loud~~.

~~If the volume is loud~~, then the neighbors will complain.

If the stereo is on, then the neighbors will complain.

**32.** ~~If Ginger goes to the movies~~, then Marta will go to the movies.

If Yumi goes to the movies, ~~then Ginger will go to the movies~~.

If Yumi goes to the movies, then Marta will go to the movies.

11)

**50.** 🌎 **DOGS** Use the true statements to form other conditional statements.

**A.** If a dog is a gazehound, then it hunts by sight.

**B.** If a hound bays (makes long barks while hunting), then it is a scent hound.

**C.** If a dog is a foxhound, then it does not hunt primarily by sight.

**D.** If a dog is a coonhound, then it bays when it hunts.

**E.** If a dog is a greyhound, then it is a gazehound.

E & A → If a dog is a greyhound, then it hunts by sight.

D & B → If a dog is a coonhound, then it is a scent hound.

**12-13)**

**10.** Symmetric property of equality: If $m\angle A = m\angle B$, then __?__ $m\angle B = m\angle A$

**11.** Transitive property of equality: If $BC = CD$ and $CD = EF$, then __?__ $BC = EF$

**12.** Substitution property of equality: If $LK + JM = 12$ and $LK = 2$, then __?__ $2 + JM = 12$ $(JM = 10)$

**13.** Subtraction property of equality: If $PQ + ST = RS + ST$, then __?__ $PQ = RS$

**14.** Division property of equality: If $3(m\angle A) = 90°$, then $m\angle A =$ __?__ $30°$

14-15)

**16.** $p - 1 = 6$
$+1 \quad +1$

$p = 7$

**17.** $q + 9 = 13$
$-9 \quad -9$

$q = 4$

**18.** $2r - 7 = 9$
$+7 \quad +7$

$\dfrac{2r}{2} = \dfrac{16}{2}$

$r = 8$

**19.** $7s + 20 = 4s - 13$
$-4s \qquad -4s$

$3s + 20 = -13$
$\quad -20 \quad -20$

$\dfrac{3s}{3} = \dfrac{-33}{3}$

$s = -11$

**20.** $3(2t + 9) = 30$

$6t + 27 = 30$
$\quad -27 \quad -27$

$\dfrac{6t}{6} = \dfrac{3}{6}$

$t = \frac{1}{2}$ (or .5)

16)

**6.** Reflexive Property of Segment Congruence

**GIVEN** ▶ $EF$ is a line segment

**PROVE** ▶ $\overline{EF} \cong \overline{EF}$



| Statements | Reasons |
|---|---|
| 1. $EF = EF$ | 1. ___?___ ~~Reflexive Prop.~~ |
| 2. ___?___ $\overline{EF} \cong \overline{EF}$ | 2. Definition of congruent segments |

**7.** Transitive Property of Segment Congruence

**GIVEN** ▶ $\overline{AB} \cong \overline{JK}, \overline{JK} \cong \overline{ST}$

**PROVE** ▶ $\overline{AB} \cong \overline{ST}$
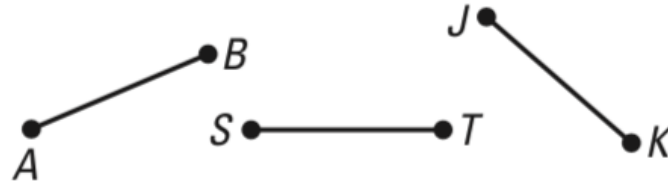


| Statements | Reasons |
|---|---|
| 1. $\overline{AB} \cong \overline{JK}, \overline{JK} \cong \overline{ST}$ | 1. ___?___ Given |
| 2. $AB = JK, JK = ST$ | 2. ___?___ Def. of ≅ segments |
| 3. $AB = ST$ | 3. ___?___ Transitive |
| 4. $\overline{AB} \cong \overline{ST}$ | 4. ___?___ Def. of ≅ segments |

17)

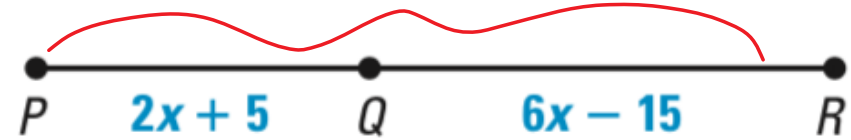**8. GIVEN** ▶ $\overline{AB} \cong \overline{BC}, \overline{CD} \cong \overline{BC}$

A — $2x + 1$ — B —— C — $4x - 11$ — D

$$2x + 1 = 4x - 11$$
$$-2x \qquad\qquad -2x$$
$$1 = 2x - 11$$
$$+11 \qquad\qquad +11$$
$$\frac{12}{2} = \frac{2x}{2}$$
$$6 = x$$

**9. GIVEN** ▶ $PR = 46$

P — $2x + 5$ — Q — $6x - 15$ — R
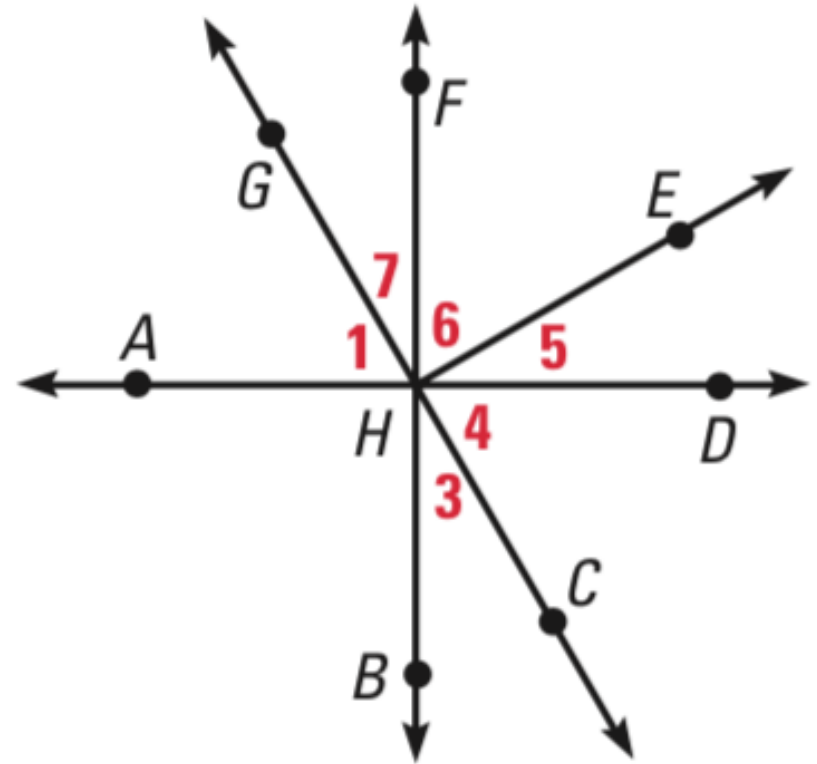
$$2x + 5 + 6x - 15 = 46$$
$$8x - 10 = 46$$
$$+10 \qquad +10$$
$$\frac{8x}{8} = \frac{56}{8}$$
$$x = 7$$

18)

$m\angle EHC = m\angle DHB = m\angle AHB = 90°$



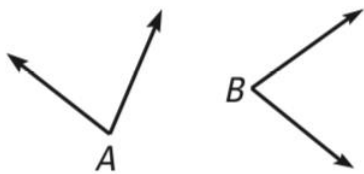**12.** If $m\angle 7 = 28°$, then $m\angle 3 =$ ___?___. 28°

**13.** If $m\angle EHB = 121°$, then $m\angle 7 =$ ___?___. 31°

**14.** If $m\angle 3 = 34°$, then $m\angle 5 =$ ___?___. 34°

**15.** If $m\angle GHB = 158°$, then $m\angle FHC =$ ___?___. 158°

**19)**

**10.** ▶ **PROVING THEOREM 2.2** Copy and complete the proof of the Symmetric Property of Congruence for angles.

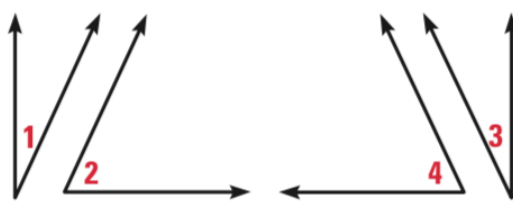**GIVEN** ▶ $\angle A \cong \angle B$

**PROVE** ▶ $\angle B \cong \angle A$



| Statements | Reasons |
|---|---|
| 1. $\angle A \cong \angle B$ | 1. __?__ Given |
| 2. __?__ $m\angle A = m\angle B$ | 2. Definition of congruent angles |
| 3. $m\angle B = m\angle A$ | 3. __?__ Symmetric |
| 4. $\angle B \cong \angle A$ | 4. __?__ Def. of ≅ ∠'s |

**18.** ▶ **PROVING THEOREM 2.5** Copy and complete the proof of the Congruent Complements Theorem.

**GIVEN** ▶ $\angle 1$ and $\angle 2$ are complements,
$\angle 3$ and $\angle 4$ are complements,
$\angle 2 \cong \angle 4$

**PROVE** ▶ $\angle 1 \cong \angle 3$



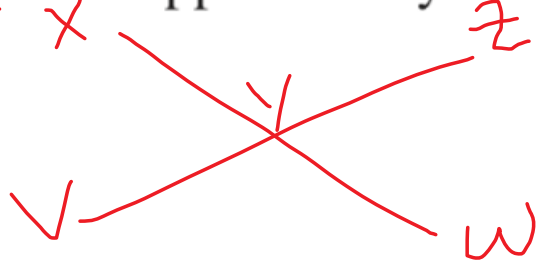| Statements | Reasons |
|---|---|
| 1. $\angle 1$ and $\angle 2$ are complements, $\angle 3$ and $\angle 4$ are complements, $\angle 2 \cong \angle 4$ | 1. __?__ Given |
| 2. __?__ , __?__  $m\angle 1 + m\angle 2 = 90$  $m\angle 3 + m\angle 4 = 90$ | 2. Def. of complementary angles |
| 3. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$ | 3. Transitive property of equality |
| 4. $m\angle 2 = m\angle 4$ | 4. __?__ Def. of ≅ segments |
| 5. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$ | 5. __?__ Substitution |
| 6. $m\angle 1 = m\angle 3$ | 6. __?__ Subtraction |
| 7. __?__ $\angle 1 \cong \angle 3$ | 7. Definition of congruent angles |

# 20-21)

**19.** $\angle 1$ and $\angle 2$ are a linear pair. $\angle 2$ and $\angle 3$ are a linear pair. $\angle 3$ and $\angle 4$ are a linear pair.
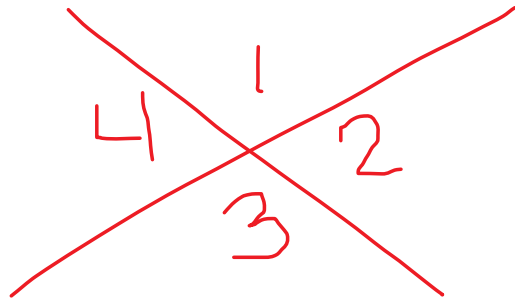
$1 \cong 3$

$2 \cong 4$

**20.** $\angle XYZ$ and $\angle VYW$ are vertical angles. $\angle XYZ$ and $\angle ZYW$ are supplementary. $\angle VYW$ and $\angle XYV$ are supplementary.

$XYZ \cong VYW$

$ZYW \cong XYV$