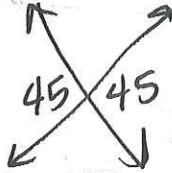


- 10) **Given:** A, B, and C are three points
Conjecture: A, B, and C are collinear.
 Sketch a counterexample in the space provided.



- 11) **Given:** $\angle 1$ and $\angle 2$ are complementary.
Conjecture: $\angle 1$ and $\angle 2$ form a right angle.
 Sketch a counterexample in the space provided.



OR



- 12) Use the **Law of Detachment** to write a valid conclusion for the given information.
 a. If it is an equilateral triangle, then all sides are equal.
 b. Triangle ABC is an equilateral triangle.

c. $\triangle ABC$ has all equal sides

- 13) Use the **Law of Syllogism** to write a valid conclusion for the given information.
 a. If it is a scalene triangle, then all side lengths of the triangle are unequal.
 b. If all side lengths of a triangle are unequal, then all angle measures are different.

c. If it is a scalene \triangle , then all \angle meas are diff

- 14) Determine whether statement (3) follows from statements (1) and (2) by the Law of Detachment or the Law of Syllogism. If it does, state which law was used. If it does not, write *invalid*.

- (1) Perpendicular lines intersect.
 (2) Lines m and n are perpendicular.
 (3) Lines m and n intersect.

Yes, Law of Detachment

- 15) Complete the table below:

	STATEMENTS	TRUTH VALUE
Conditional	If the cell phone works, then the batteries are charged.	True
Inverse	If the cell does not work, then the batt are not charged	False
Converse	If the batteries are charged, then the cell works	False
Contrapositive	If the batt are not charged, then the cell does not work	True

16) Complete the following two-column algebraic proofs.

Given: $\frac{w-4}{6} = 3$

Prove: $w = 22$

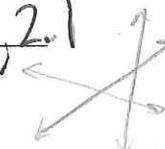
Statements	Reasons
1) $\frac{w-4}{6} = 3$	1) Given
2) $6 \cdot \frac{w-4}{6} = 3 \cdot 6$	2) mult prop
3) $w-4 = 18$	3) Substitution
4) $w-4+4 = 18+4$	4) Add Prop
5) $w = 22$	5) Substitution

Given: $2(x-2) = 4x + 10$

Prove: $x = -7$

Statements	Reasons
1) $2(x-2) = 4x + 10$	1) Given
2) $2x - 4 = 4x + 10$	2) Distributive
3) $2x - 4 + 4 = 4x + 10 + 4$	3) Add prop
4) $2x = 4x + 14$	4) substitution
5) $2x - 4x = 4x - 4x + 14$	5) Subtraction prop
6) $-2x = 14$	6) Subst
7) $-2x = \frac{14}{-2}$	7) Div Prop
8) $x = -7$	8) Subst

Determine whether the following are ALWAYS, SOMETIMES, or NEVER true. Make sure to state the postulate that you use for #17-22. Drawing pictures may also help you decide.

- 17) Three noncollinear points determine a plane. Always 2.2, 2.4
- 18) The intersection of three planes is one line. Sometimes/Always
- 19) Three points lie on the same line. Sometimes
- 20) Between points A and B there are two lines. Never, 2.1
- 21) Three lines intersect at one point. Sometimes 
- 22) If plane T contains points E and F, then plane T also contains \overline{EF} . Always, 2.5
- 23) Vertical angles are adjacent. Never
- 24) Complementary angles add up to 90° . Always
- 25) Supplementary angles form linear pair. Sometimes
- 26) Use the following statements to write a compound statement for each conjunction or disjunction. Then find its truth value.

$p: -3 > 2$

$q: 3x = 12$ when $x = 4$

$r: \text{An isosceles triangle has two equal sides}$

a. p and q

$-3 > 2$ and $3x = 12$ when $x = 4$

False

b. p or q

$-3 > 2$ or $3x = 12$ when $x = 4$

True

c. $p \vee (q \wedge r)$

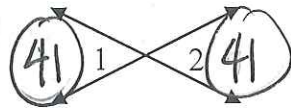
$-3 > 2$ or $(3x = 12$ when $x = 4$ and an isosceles Δ has 2 equal sides)

True

- 27) Complete the following truth table:

p	q	$\sim q$	$\sim q \wedge p$	$p \vee (\sim q \wedge p)$
T	T	F	F	T
T	F	T	T	T
F	T	F	F	F
F	F	T	F	F

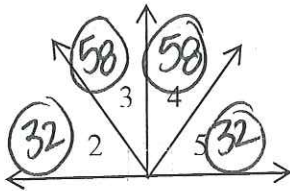
28) $m\angle 1 = x + 24$ and $m\angle 2 = 3x - 10$



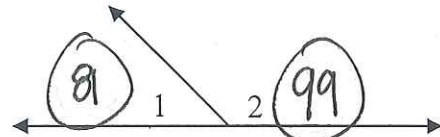
$$x + 24 = 3x - 10$$

$$34 = 2x \quad 17 = x$$

- 30) $\angle 2$ and $\angle 3$ are complementary, $\angle 2 \cong \angle 5$, $m\angle 4 = 58$.



29) $m\angle 1 = 2x + 15$ and $m\angle 2 = 2x + 33$.



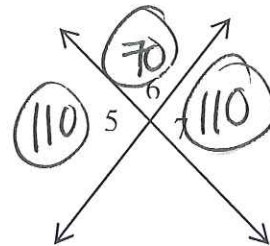
$$2x + 15 + 2x + 33 = 180$$

$$4x + 48 = 180$$

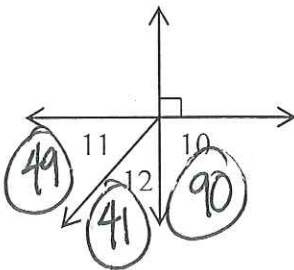
$$4x = 132$$

$$x = 33$$

31) $m\angle 6 = 70$



32) $m\angle 11 = 4x - 3$
 $m\angle 12 = 3x + 2$



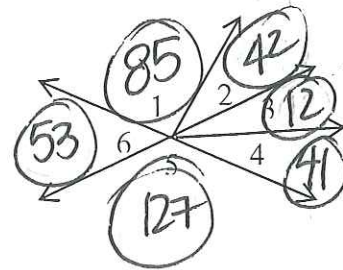
$$4x - 3 + 3x + 2 = 90$$

$$7x - 1 = 90$$

$$7x = 91$$

$$x = 13$$

33) $m\angle 1 = 7x + 1$, $m\angle 2 = 4x - 6$
 $m\angle 3 = 2x - 12$, $m\angle 4 = 3x + 5$



$$7x + 1 + 4x - 6 + 2x - 12 + 3x + 5 = 180$$

$$16x - 12 = 180$$

$$16x = 192$$

$$x = 12$$