18. true

19. true

20. true

21. false

22. ~~true~~ false

23. true

24. false

25.

equation	reason
$4x + 15 = 39$	Given
$4x = 24$	Sub. ~~post~~ prop. equality
$x = 6$	division prop. equality

26.

$6x + 47 = 10x - 9$	Given
$47 = 4x - 9$	subt. prop of equal.
$56 = 4x$	add. prop. of equal
$14 = x$	division prop. equal.

27. $2(-7x+3) = -50$ Given
            $-7x+3 = -25$ division prop of equality
               $-7x = -28$ Subt. prop of equality
                  $x = 4$ division prop. of equality

                or

            $-14x + 6 = -50$ distribution
                $-14x = -56$ Subt. prop of equality
                    $x = 4$ division prop of equality

28. $\dfrac{54 + 9x}{3} = \dfrac{\cancel{3}(7x+6)}{\cancel{3}}$ Given

        $18 + 3x = 7x + 6$ division prop of equal.
        $18 \qquad = 4x + 6$ subt. prop. of equal.
        $12 \qquad = 4x$ Subt. prop. of equal.
        $3 \qquad = x$ division prop of. equal.

                or

        $54 + 9x = 3(7x+6)$ Given
        $54 + 9x = 21x + 18$ distributive property
        $54 \qquad = 12x + 18$ Subt. prop. of equal
        $36 \qquad = 12x$ Subt. prop. of equal.
        $\dfrac{36}{12} = x$ division prop. of equal.

        $x = 3$

equation	reason

29. $13(2x-3)-20x=3$ — Given

$26x - 39 - 20x = 3$ — distribution
$6x - 39 = 3$ — simplify / collect like terms
$6x = 42$ — add. prop. equal.
$x = 7$ — division prop equal

30. $31 + 25x = 7x - 14 + 3x$ — Given
$31 + 25x = 10x - 14$ — simplify / collect like terms
$31 + 15x = -14$ — subt. prop of equality
$15x = -45$ — subt. prop of equality
$x = -3$ — division prop of equality

31. $m\angle JKL = m\angle ABC$ — transitive property

32. $m\angle MNO$ — symmetric property

33. $m\angle XYZ$ — reflexive property

34.
2 (reason) definition of right angle
3 (statement) point C is the interior of $\angle ABD$
4 (reason) angle addition postulate
5. 90
6. $\angle ABC$ and $\angle CBD$ are complementary

35.

Prove perimeter ΔXYZ is 3·XY

Statement	Reason
1. $\overline{XY} \cong \overline{YZ} \cong \overline{ZX}$	1. given
2. $XY = YZ = ZX$	2. def. of congruent segments
3. perimeter of ΔXYZ is $XY + YZ + ZX$	3. def. of perimeter of a triangle.
4. Perimeter ΔXYZ = $XY + XY + XY$	4. substitution
5. Perimeter ΔXYZ = $3 \cdot XY$	5. simplify / collect like terms
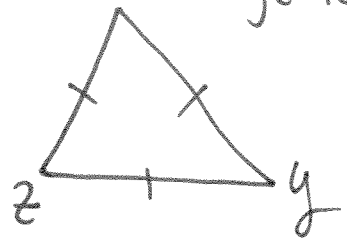
36. $158°$
37. $23°$
38. $59°$
39. $90°$
40. $90°$

41.

Statement	Reason
1. $\angle UKV$ and $\angle VKW$ are complements	1. given
2. $\angle ZKY \cong \angle ~~UKS~~ VKW$ $\angle YKX \cong \angle UKV$	2. vertical angle cong. theorem
3. ~~was~~ $\angle ZKY$ and $\angle YKX$ are complements	3. congruent complement theorem

OR
Next page

Statement	reason
41.	
1. $\angle UKV$ and $\angle VKW$ are complements	1. Given
2. $m\angle UKV + m\angle VKW = 90°$	2. def of complementary angles
3. $\angle UKV \cong \angle XKY$ $\angle VKW \cong \angle YKZ$	3. vertical angles are congruent.
4. $m\angle UKV = m\angle XKY$ $m\angle VKW = m\angle YKZ$	4. definition of congruent angles
5. $m\angle YKZ + m\angle XKY = 90°$	5. substitution
6. $\angle YKZ$ & $\angle XKY$ are complements	6. def of complementary angles.

● Page 126 4-24

4. -20,480, -5120, ~~5120))))~~ -1280, -320...

（÷4   -80）

5. $-10 \div -2 = 5$ counter example.

6. if-then : if an angle is 34° then it is acute.

converse : if an angle is acute then it is 34°

● inverse : if an angle is not 34° then it is not acute

contrapositive : if an angle is not acute then it is not 34°

7. yes - valid for a definition of complementary angles

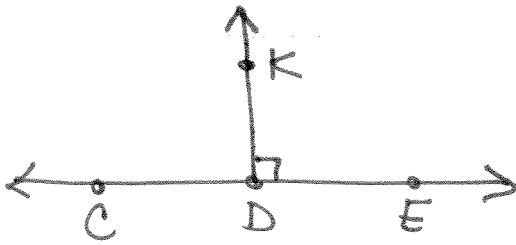8. the interior angles of a polygon are congruent if and only if the polygon is equiangular.

9. ∠B measures 90°

10. if $4x = 12$, then $2x = 6$

11. $3 + 5 = 8$
$7 + 11 = 18$
● $1 + 3 = 4$ the sum of two odd integers is even.

deductive: $(2m+1) + (2n+1) \rightarrow 2m + 2n + 2 \rightarrow 2(m+n+1)$
even!

12.

straight angle CDE is bisected... the angle is cut in half! So the bisecting ray ($\overrightarrow{DK}$) forms a perpendicular angle!

13. B

14.

equation	reason
$-9x - 21 = -20x - 87$	given
$11x - 21 = -87$	addition property of equal
$11x = 66$	addition property of equal
$x = 6$	division prop. of equal.

~~15. equation~~
~~152 15x + 22 = 7x + 62~~

15.

equation	reason
$15x + 22 = 7x + 62$	given
$8x + 22 = 62$	subtraction property of equal
$8x = 40$	subtraction property of equal
$x = 5$	division prop. of equal.

16.   equation   reason

$$3(2x+9) = 30$$
$$6x + 27 = 30$$ given
$$6x = 3$$ distributive property
$$x = \frac{3}{6} \text{ or } \frac{1}{2}$$ subtraction prop of equa
                                              division prop of equal

17.   equation   reason

$$5x + 2(2x-23) = -154$$
$$5x + 4x - 46 = -154$$ given
$$9x - 46 = -154$$ distributive property
$$9x = -108$$ simplify
$$x = -12$$ addition prop. of equal
                          division prop. of equal.

18.   if $\angle DEF \cong \angle JKL$
      then $\angle JKL \cong \angle DEF$ Symmetric property of cong

19. reflexive prop. of congruence

20. transitive prop of ~~congruence~~ equality

21. Statement   reason

∠A ≅ ∠B   ∠B ≅ ∠C   Given
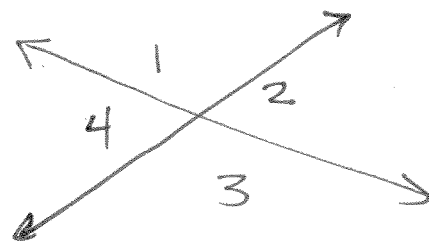m∠A = m∠B   m∠B = m∠C   definition of angle
                              congruence
m∠A = m∠C   transitive prop. of
                              equality.
∠A ≅ ∠C   definition of angle
                              congruence

22. m∠1 = 114°   m∠2 66°
                   m∠3 114°
                   m∠4 66°

23. m∠4 = 57°   m∠1
                   m∠2   57°
                   m∠3

24. Statements   Reason
     ∠3 and ∠2 are complimentary   given
       m∠1 + m∠2 = 90°   given
       m∠2 + m∠3 = 90°   def of complimentary and
       m∠1 + m∠2 = m∠2 + m∠3   transitive prop of equal
          m∠1 = m∠3   Subt. prop. of equal.
          ∠1 ≅ ∠3   def. of congruent angl

Page 130 1-21

1. [box with 0]

2. [geometric figure with triangles]
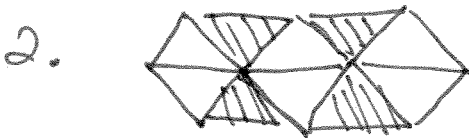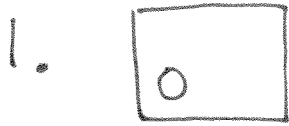
3. $-6, -1, 4, 9, \ldots$ ($+5$ 14)

4. $100, -50, 25, -12.5$ ($\div$ ~~-~~ -2, 6.25)

5. if then: if the angles are right, they are congruent

   converse: if angles are congruent, they are right

   inverse: if angles are not right, they are not congruent

   contrapositive: if angles are not congruent, they are not right.

6. if then: if the animal is a frog, then it is an amphibian
   converse: if the animal is an amphibian, then it is a frog
   inverse: if the animal is not a frog, then it is not an amphibian
   contrapositive: if the animal is not an amphibian, then it is not a frog.

7. if then: if $5x+4 = -6$, then $x = -2$
   converse: if $x = -2$ then $5x+4 = -6$
   inverse: if $5x+4 \neq -6$ then $x \neq -2$
   contrapositive: if $x \neq -2$ then $5x+4 \neq -6$

7. if then   if x = -2 then 5x+4 = -6
   converse   if 5x+4 = -6 then x = -2
   inverse   if x ≠ -2 then 5x+4 ≠ -6
   contrapositive if 5x+4 ≠ -6 then x ≠ -2

8. if then if a polygon is regular then it is equilateral
   converse if a polygon is equilateral then it is regular
   inverse   if a polygon is not regular then it is not equilateral
   contrapositive if a polygon is not equilateral then it is
                   not regular.

9. you will miss band practice

10. if Margot goes to college, then she will need to
    buy a lab manual.

11. $\overleftrightarrow{RS}$ contains points R and S

12. plane X contains points M, Q and N

13. planes X and y intersect at line NQ (or $\overleftrightarrow{NQ}$)

14.   equation   reason
    9x+31 = -23   given
    9x = -54   subt. prop. equal
    x = -6   div. prop. equal

15.

equation	reason
$-7(-x+2) = 42$	given
$7x - 14 = 42$	distributive prop
$7x = 56$	add. prop. of equal.
$x = 8$	division prop. of equal.

15. take two

equation	reason
$-7(-x+2) = 42$	given
$-x + 2 = 6$	division prop. of equal
$-x = -8$	subt. prop. of equal
$x = 8$	division prop of equal (or mult. prop of equal

16.

$26 + 2(3x+11) = -18x$	given
$26 + 6x + 22 = -18x$	distributive prop
$48 + 6x = -18x$	simplify
$48 = -24x$	Subt prop of equal.
$-2 = x$	division prop of equal.

17. symmetric prop of congruence (B)

18. reflexive prop of congruence (A)

19. transitive prop of congruence (C)

20.

Angle values: $126°$, $54°$, $3x-21$, $7y$, $2x+4$, $54°$, $5y+36$, $126°$
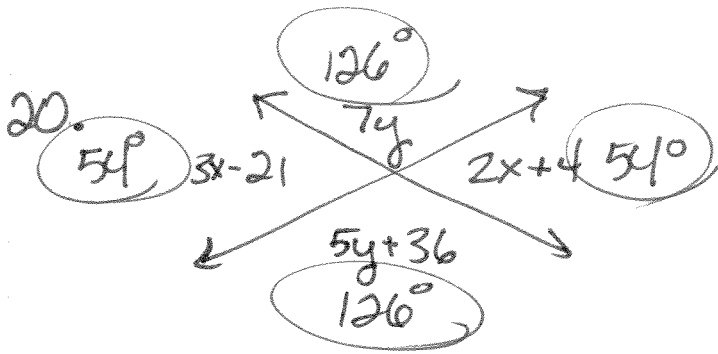
$3x-21 = 2x+4$

$\boxed{X = 25}$

$7y = 5y+36$

$2y = 38$

$\boxed{y = 18}$

21.

$\overline{AC} \cong \overline{BD}$

statement	reason
$\overline{AX} \cong \overline{DX}$ $\overline{XB} \cong \overline{XC}$	given
$AX = DX \qquad XB = XC$	def of congruence segments
$AC = AX + XC$ * $DB = DX + XB$	~~day~~ angle addition postulate
* $AC = DX + XB$	substitution
* $AC = DB$	~~substitution~~
	transitive prop of equality
$\overline{AC} \cong \overline{DB}$	def. of congruent segments