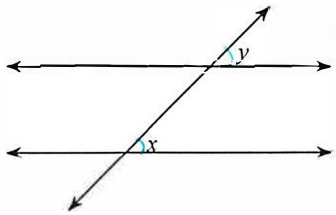
SM2 Name Answer Key

Pre-Chapter 6 Practice Test

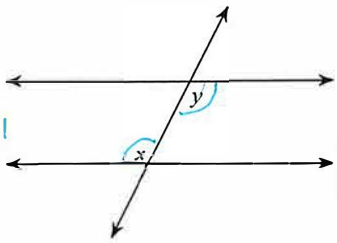
Date _____ Period ____

Identify each pair of angles as corresponding, alternate interior, alternate exterior, same-side interior, vertical, or linear pair.

1) 

Corresponding

(same relative position, both on the right side of the transversal and above their parallel line)

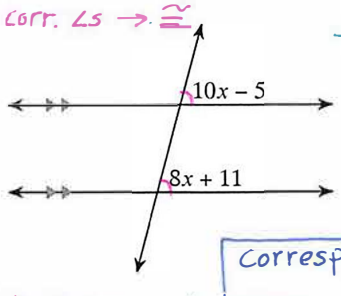
2) 

Alternate Interior

(alternate (different) sides of the transversal on the interior of the parallel lines)

Solve for *x*. State which theorem or postulate you used.

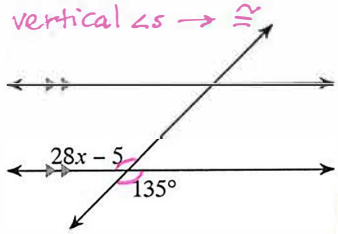
3) corr. ∠s → ≅



$10x - 5 = 8x + 11$
$-8x \quad -8x$
$2x - 5 = 11$
$+5 \quad +5$
$\frac{2x}{2} = \frac{16}{2}$
$x = 8$

Corresponding angles postulate

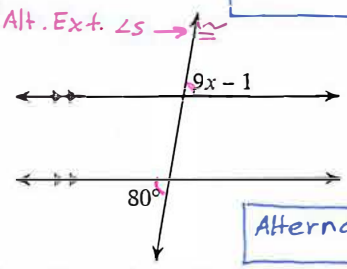
4) vertical ∠s → ≅



$28x - 5 = 135$
$+5 \quad +5$
$\frac{28x}{28} = \frac{140}{28}$
$x = 5$

vertical angles theorem

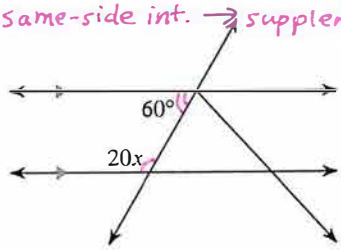
5) Alt. Ext. ∠s → ≅



$9x - 1 = 80$
$+1 \quad +1$
$\frac{9x}{9} = \frac{81}{9}$
$x = 9$

Alternate Exterior angles theorem

6) same-side int. → supplementary

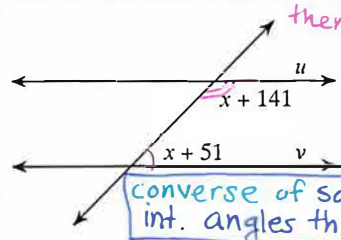


$20x + 60 = 180$
$-60 \quad -60$
$\frac{20x}{20} = \frac{120}{20}$
$x = 6$

Same-side interior angles theorem

Find the value of *x* that makes lines u and v parallel. State which postulate or theorem you used.

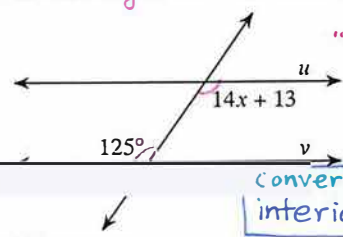
7) same-side int. ∠s: if supplementary then u ∥ v



$x + 141 + x + 51 = 180$
$2x + 192 = 180$
$-192 \quad -192$
$\frac{2x}{2} = \frac{-12}{2}$
$x = -6$

converse of same-side int. angles thm.

8) alt. int. angles: if ≅, then u ∥ v ("is parallel to")



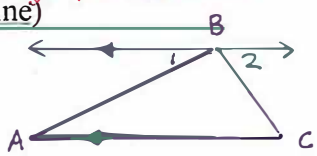
$14x + 13 = 125$
$-13 \quad -13$
$\frac{14x}{14} = \frac{112}{14}$
$x = 8$

converse of alternate interior angles thm.

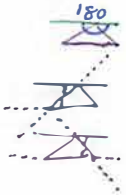
Write a two-column proof for the Triangle Angle Sum Theorem

(yours may be a little different if you labeled things differently - process should still be about the same)

9) Given $\triangle ABC$, prove $m\angle A + m\angle B + m\angle C = 180°$ (hint: draw an auxillary line)



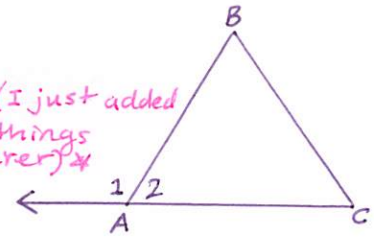
Statements	Reasons
1. $\triangle ABC$	1. Given
2. Draw a line parallel to $\overline{AC}$ through point B	2. Parallel postulate
3. $m\angle 1 + m\angle ABC + m\angle 2 = 180$	3. Supplementary angles
4. $\angle 1 \cong \angle A$	4. Alternate Interior angles theorem
5. $\angle 2 \cong \angle C$	5. Alt. Int. angles thm
6. $m\angle A + m\angle ABC + m\angle C = 180$	6. Substitution



Write a two-column proof for the exterior angle theorem.

things you wouldn't actually include in the proof (I just added to try to make things clearer)

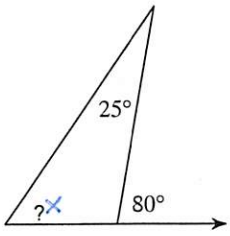
10) Given $\triangle ABC$, prove that $m\angle 1 = m\angle B + m\angle C$.



Statements	Reasons
1. $\triangle ABC$	1. Given
2. $m\angle 2 + m\angle B + m\angle C = 180$	2. Triangle angle sum theorem
3. $m\angle 2 + m\angle 1 = 180$	3. Linear pair postulate (or def. of linear pair/supplementary)
4. $m\angle 2 + m\angle B + m\angle C = m\angle 2 + m\angle 1$	4. substitution (or transitive property)
5. $m\angle B + m\angle C = m\angle 1$	5. subtraction

Find the measure of each angle indicated.

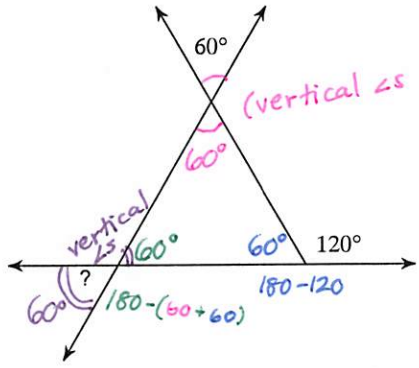
11)



$x + 25 = 80$
$-25 \quad -25$

$55°$

12)

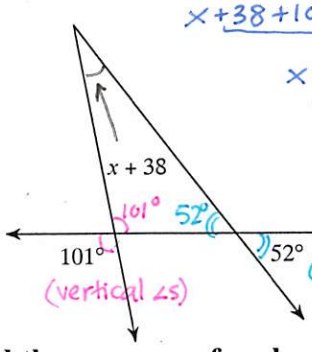


(vertical ∠s are ≅)

$60°$

Solve for *x*.

13)



(vertical ∠s)

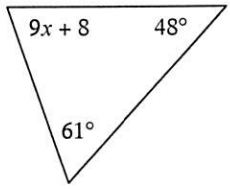
(vertical ∠s)

$x + 38 + 101 + 52 = 180$

$x + 191 = 180$
$-191 \quad -191$

$x = -11$

14)



$9x + 8 + 48 + 61 = 180$

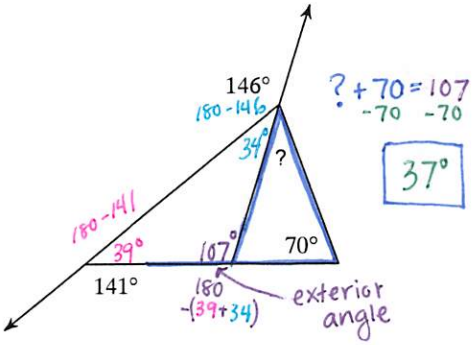
$9x + 117 = 180$
$-117 \quad -117$

$\frac{9x}{9} = \frac{63}{9}$

$x = 7$

Find the measure of each angle indicated.

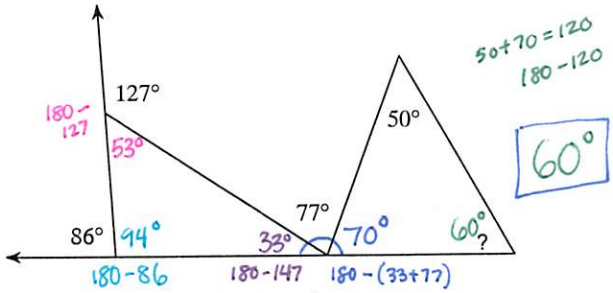
15)



$? + 70 = 107$
$-70 \quad -70$

$37°$

16)



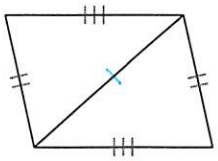
$50 + 70 = 120$
$180 - 120$

$60°$

State if the two triangles are congruent. If they are, state how you know.

remember to mark vertical angles and shared sides!

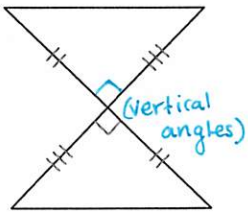
17)



SSS

(shared side → reflexive prop.)

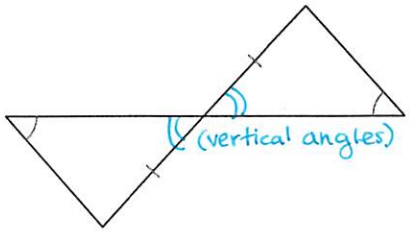
18)



(vertical angles)

SAS

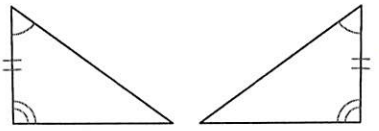
19)



(vertical angles)

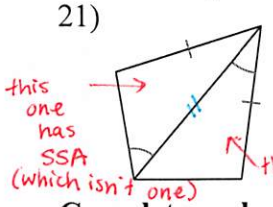
AAS

20)



ASA

21)



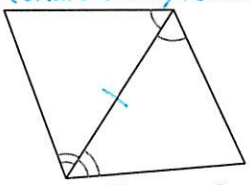
this one has SSA (which isn't one)

this one has SAS

Not Congruent

(doesn't match up right)

22) (shared side/reflexive prop.)

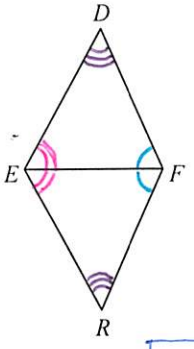


ASA

Complete each congruence statement by naming the corresponding angle or side.

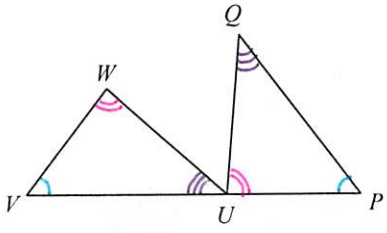
remember to keep corresponding parts in the right order!

23) $\triangle FED \cong \triangle FER$



$\angle DFE \cong$? $\angle RFE$

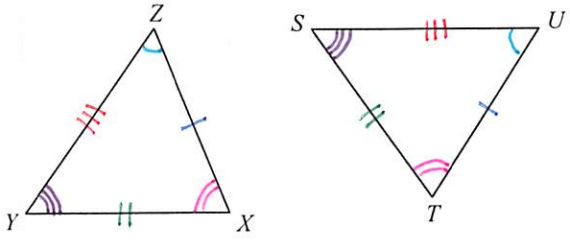
24) $\triangle VWU \cong \triangle PUQ$



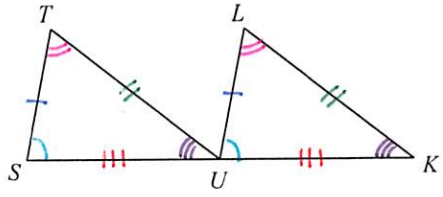
$\overline{WU} \cong$? $\overline{UQ}$

Mark the angles and sides of each pair of triangles to indicate that they are congruent.

25) $\triangle ZXY \cong \triangle UTS$

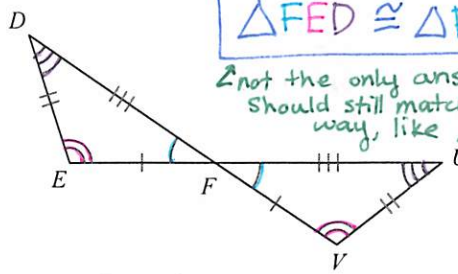


26) $\triangle STU \cong \triangle ULK$



Write a statement that indicates that the triangles in each pair are congruent.

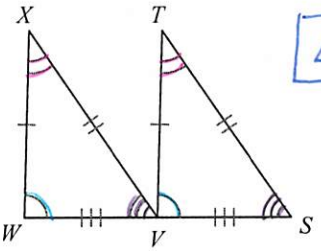
27)



$\triangle FED \cong \triangle FVU$

not the only answer but letters should still match up in the same way, like $\triangle EDF \cong \triangle VUF$

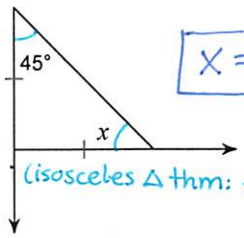
28)



$\triangle WXV \cong \triangle VTS$

Find the value of *x*.

29)

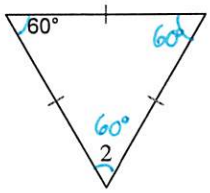


$x = 45°$

(isosceles $\triangle$ thm: sides $\cong$ → angles $\cong$)

30) $m\angle 2 = 10x$

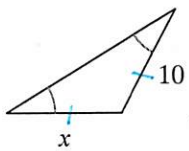
$60°$



$\frac{10x}{10} = \frac{60}{10}$

$x = 6$

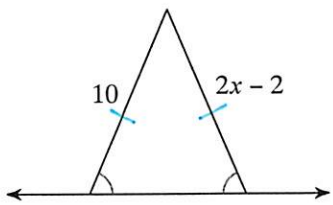
31)



$x = 10$

(converse of isosc. $\triangle$ thm: $\cong$ angles → $\cong$ sides)

32)



$2x - 2 = 10$

$+2 \quad +2$

$\frac{2x}{2} = \frac{12}{2}$

$x = 6$

33) Write the slope formula.

$m = \frac{\Delta y}{\Delta x}$ or $\frac{y_2 - y_1}{x_2 - x_1}$ or $\frac{\text{rise}}{\text{run}}$

34) Write the distance formula.

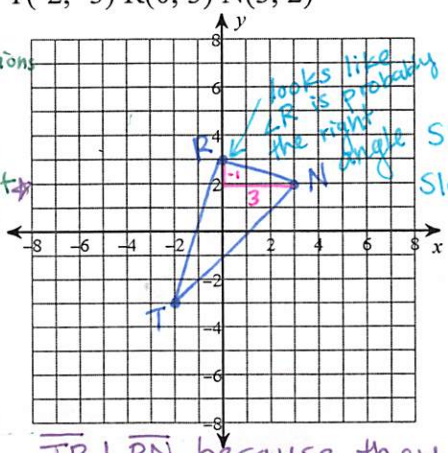
$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

same thing as $c = \sqrt{a^2 + b^2}$

35) Prove that $\triangle TRN$ is a right triangle. prove it has a right angle (by proving that 2 sides are perpendicular)

T(-2, -3) R(0, 3) N(3, 2)

with work/calculations AND *conclusion statement* (use complete sentences)



Slope $\overline{TR} = \frac{-3-3}{-2-0} = \frac{-6}{-2} = 3$

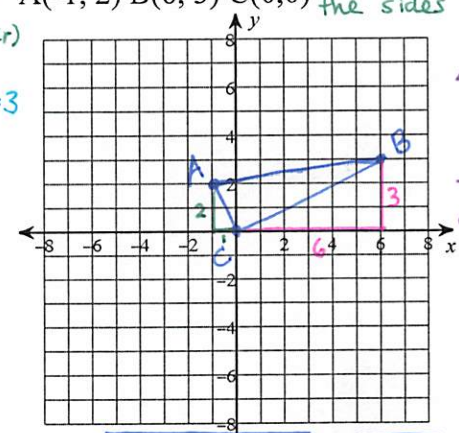
Slope $\overline{RN} = \frac{-1}{3} = -\frac{1}{3}$

$\perp$ is the symbol for perpendicular to

$\overline{TR} \perp \overline{RN}$ because they have opposite reciprocal slopes. Therefore, $\angle R$ is 90° and $\triangle TRN$ is a right triangle.

36) Prove whether $\triangle ABC$ is isosceles, equilateral, or scalene. by using distance formula to find the lengths of the sides

A(-1, 2) B(6, 3) C(0,0)



$\triangle ABC$ is scalene because all three sides are different lengths.

AB: $\sqrt{(6-(-1))^2 + (3-2)^2} = \sqrt{7^2 + 1^2} = \sqrt{50} = 5\sqrt{2}$ (49 + 1; 25 · 2)

AC: $\sqrt{1^2 + 2^2} = \sqrt{1+4} = \sqrt{5}$

BC: $\sqrt{6^2 + 3^2} = \sqrt{36+9} = \sqrt{45} = 3\sqrt{5}$ (9 · 5)

Finish the syllogism.

37) Pizza is good for you. Food that is good for you tastes like cardboard. _____

Pizza tastes like cardboard.

38) If Steve goes to class, he can turn his homework in on time. If Steve turns his homework in on time, he will get better grades. If steve goes to class, then he will get better grades.

Write a syllogism of your own. (obviously, many right answers. should follow pattern ①②③)
remember, if you don't have a statement linking previous statements, it's not a syllogism

39) If you do the math yourself before checking answers, you'll understand more.

If you understand more, you'll do better on the test.

If you do the math yourself before checking answers, you'll do better on the test. ☺

40) List the three "postulates" of Uno.

you can play...

1) Same color

2) Same number

3) Change color (wild)

Reminder how uno proofs work:
Starting with the "given" card, trying to play all "using" cards according to our postulates (rules) and end by playing the "prove" card last

Write a formal two-column proof. * don't forget to number your statements & reasons! *

Uno Proofs

41) Given: Green 3
Prove: Yellow 10
Using: Blue 3, Blue 10, Red 3

Statements	Reasons
1. Green 3	1. Given
2. Red 3	2. Same number
3. Blue 3	3. Same number
4. Blue 10	4. same color
5. Yellow 10	5. Same number

42) Given: Red Skip
Prove: Blue 3
Using: Blue 7, Green Reverse, Red 4, Blue Reverse, Red Reverse

Statements	Reasons
1. Red Skip	1. Given
2. R4	2. Same color
3. R Reverse	3. same color
4. G Reverse	4. same "number"
5. B Reverse	5. Same #
6. B 7	6. Same color
7. B 3	7. Same color

Algebraic Proofs

→often multiple correct ways to do these (remember, technically you don't include the work in your statements)

43) Given: $8x - 5 = 2x + 1$

Prove: $x = 1$

Statements	Reasons
1. $8x - 5 = 2x + 1$	1. Given
2. $6x - 5 = 1$ (−2x from both sides)	2. Subtraction property
3. $6x = 6$ (+5 both)	3. Addition property
4. $x = 1$ (÷6 both)	4. Division property

44) Given: $6x + 2(x - 1) = 30$

Prove: $x = 4$

Statements	Reasons
1. $6x + 2(x-1) = 30$	1. Given
2. $6x + 2x - 2 = 30$	2. Distributive prop.
3. $8x - 2 = 30$	3. combine like terms
4. $8x = 32$	4. Addition
5. $x = 4$	5. Division

45) Given: $\frac{4x+6}{2} = 9$

Prove: $x = 3$

Statements	Reasons
1. $\frac{4x+6}{2} = 9$	1. Given
2. $4x + 6 = 18$	2. Multiplication
3. $4x = 12$	3. subtraction
4. $x = 3$	4. Division

OR

Statements	Reasons
1. $\frac{4x+6}{2} = 9$	1. Given
2. $2x + 3 = 9$	2. simplify
3. $2x = 6$	3. subtraction
4. $x = 3$	4. Division

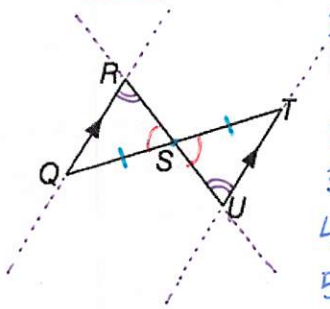
Congruent Triangles

→often there are multiple correct ways to do these. (most common variation would be same steps in a different order but sometimes the steps can vary as well) so remember, my proof is not the absolute, only right answer. :)

46) Given: S is the midpoint of $\overline{QT}$. ✱

✱ $\overline{QR} \parallel \overline{TU}$ parallel → $\overline{RU}$ is a transversal

Prove: $\Delta QSR \cong \Delta TSU$



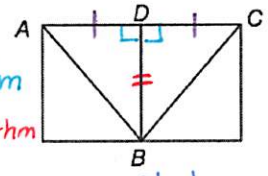
Statements	Reasons
1. S is the midpoint of $\overline{QT}$	1. Given
2. $\overline{QS} \cong \overline{TS}$	2. Midpoint thm
3. $\angle QSR \cong \angle TSU$	3. vertical $\angle$s thm
4. $\overline{QR} \parallel \overline{TU}$	4. Given
5. $\angle R \cong \angle U$	5. Alt. Interior $\angle$s thm
6. $\Delta QSR \cong \Delta TSU$	6. AAS

✱ Note: There are other (slightly different) ways you could prove this one. You could say $\angle Q \cong \angle T$ by alt. int. $\angle$s thm. If you did that instead of $\angle R \cong \angle U$, then the final reason would be ASA. If you used both $\angle Q \cong \angle T$ and $\angle R \cong \angle U$, then the reason would still be AAS without needing to use vertical angles.

47) Given: $\overline{AC} \perp \overline{BD}$ ✱

$\overline{BD}$ bisects $\overline{AC}$ ✱

Prove: $\Delta ABD \cong \Delta CBD$

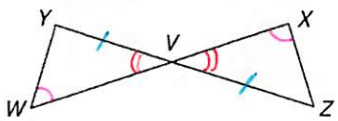


Statements	Reasons
1. $\overline{AC} \perp \overline{BD}$	1. Given
2. $\angle ADB \cong \angle CDB$	2. Both 90° (def. of perpendicular)
3. $\overline{BD}$ bisects $\overline{AC}$	3. Given
4. $\overline{AD} \cong \overline{CD}$	4. Def. of bisect
5. $\overline{BD} \cong \overline{BD}$	5. Reflexive prop.
6. $\Delta ABD \cong \Delta CBD$	6. SAS

48) Given: V is the midpoint of $\overline{YZ}$ ✱

$\angle W \cong \angle X$

Prove: $\overline{YW} \cong \overline{ZX}$



Statements	Reasons
1. $\angle W \cong \angle X$	1. Given
2. V is the midpoint of $\overline{YZ}$	2. Given
3. $\overline{YV} \cong \overline{ZV}$	3. Midpoint thm
4. $\angle WVY \cong \angle XVZ$	4. Vertical angles thm
5. $\Delta VWY \cong \Delta VXZ$	5. AAS
6. $\overline{YW} \cong \overline{ZX}$	6. CPCTC (corresponding parts of congruent triangles are congruent)