Name Solutions Per. Date

Geometry Ch. 6 Practice Test

Answer questions 1-5 based on the information given.
Show equations and setups, box your final answer.

1. What is the sum of the interior angles of a decagon?

$n = 10$

$S = 180(n-2)$

$S = 180(10-2)$

$\boxed{S = 1440^\circ}$

2. What is the measure of one exterior angle of a regular 12-gon?

$n = 12$

$m \text{ ext } \angle = \frac{360}{n}$

$= \frac{360}{12}$

$\boxed{m \text{ ext } \angle = 30^\circ}$

3. What is the measure of one interior angle of a regular heptagon?

$S = 180(n-2)$

$= 180(7-2)$

$S = 900^\circ$

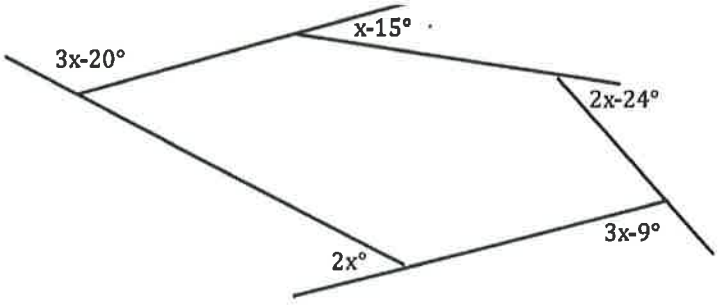
$n = 7$

$m \text{ int } \angle = \frac{S}{n}$

$= \frac{900}{7}$

$\boxed{m \text{int } \angle \approx 128.6^\circ}$

4. Find the value of x.



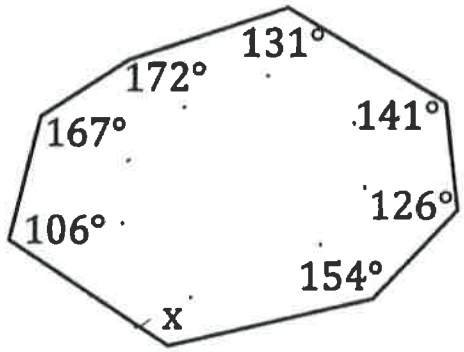
$x - 15 + 2x - 24 + 3x - 9 + 2x + 3x - 20 = 360$

$11x - 68 = 360$

$11x = 428$

$\boxed{x \approx 38.9}$

5. Find the measure of the missing angle.



$n = 8$

$S = 180(n-2)$

$= 180(8-2)$

$S = 1080$

$x + 106 + 167 + 172 + 131 + 141 + 126 + 154 = 1080$

$x + 997 = 1080$

$\boxed{x = 83°}$

For # 6-11, using the definitions that you know: oops! "quadrilateral" is an option, too.

a. Classify each of the figures below as a(n): *trapezoid, isosceles trapezoid, parallelogram, rectangle, rhombus, square* or *kite*. Write the name of the quadrilateral below the figure. There is only one correct answer for each figure.

b. Give a reason for your answer.

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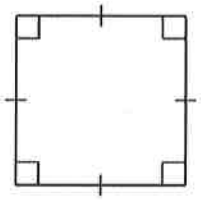
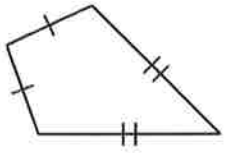
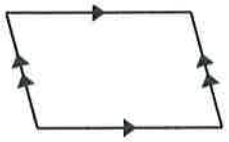
<tr>
<td> 
6. Square
• 4 ≅ sides
• 4 right ∠s.</td>
<td> 
7. Kite
2 pairs adjacent ≅ sides</td>
<td> 
8. parallelogram
2 pairs ∥ sides</td>
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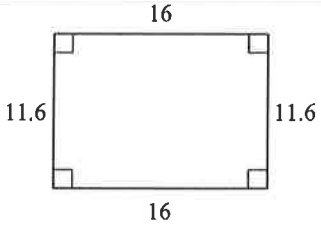
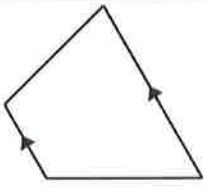
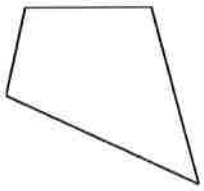
<td> 
16
11.6
11.6
16
9. Rectangle
4 right ∠s.</td>
<td> 
10. trapezoid
1 pair ∥ sides</td>
<td> 
11. quadrilateral
4 sides</td>
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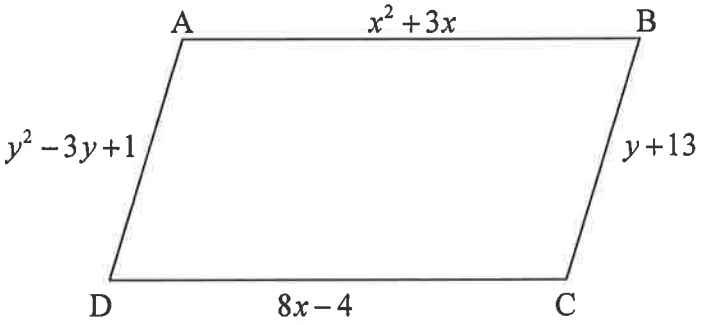
</table>

12. Use $\square ABCD$ to find x and y. Give a reason for your setups.

$x =$ 1 ; 4

$y =$ -2 ; 6



opp. sides $\cong$

$AB = DC$

$x^2+3x = 8x-4$

$x^2+3x-8x+4 = 0$

$x^2-5x+4 = 0$

$(x-1)(x-4) = 0$

$AD = BC$

$y^2-3y+1 = y+13$

$y^2-3y-y+1-13 = 0$

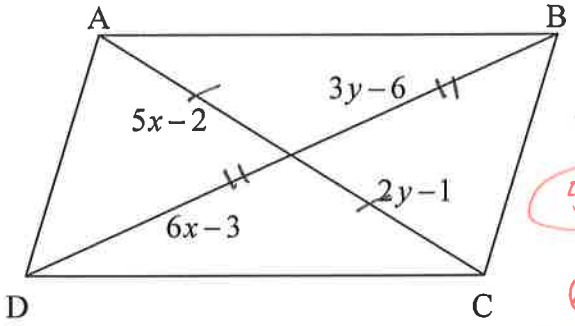
$y^2-4y-12 = 0$

$(y+2)(y-6) = 0$

13. Use $\square ABCD$ to find x and y. Give a reason for your setups.

$x =$ ~~5~~ 3

$y =$ 11 ~~6~~ 7



diagonals bisect each other

$5x-2 = 2y-1$

$5x-2y = 1$

$6x-3 = 3y-6$

$6x-3y = -3$

copy error!

$5x-2 = 2y+1$

$6x-3 = 3y-6$

$-3(5x-2y = 3)$

$2(6x-3y = -3)$

$-15x+6y = -9$

$12x-6y = -6$

$-3x = -15$

$x = 5$

$5x-2 = 2y+1$

$5(5)-2 = 2y+1$

$25-2-1 = 2y$

$22 = 2y$

$11 = y$

$-3(5x-2y = 1)$

$2(6x-3y = -3)$

$-15x+6y = -3$

$12x-6y = -6$

$-3x = -9$

$x = 3$

$5x-2 = 2y+1$

$5(3)-2 = 2y+1$

$13 = 2y+1$

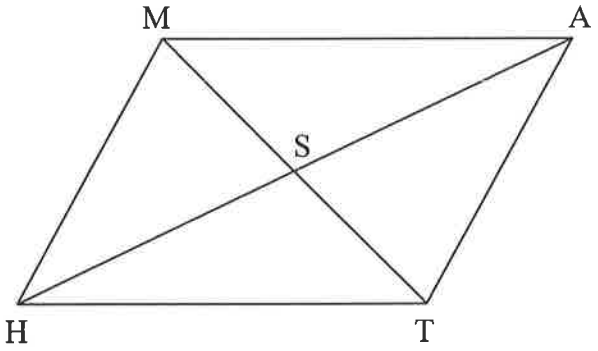
$12 = 2y$

$y = 6.7$

For problems 14-15, complete each statement about ▱MATH. Then justify your answer!!! (Explain why your answer is true.)

14. $\overline{MA} \cong$ $\overline{HT}$

opposite sides are $\cong$



15. ∠MAT is supplementary to ∠ ATH or ∠ AMH

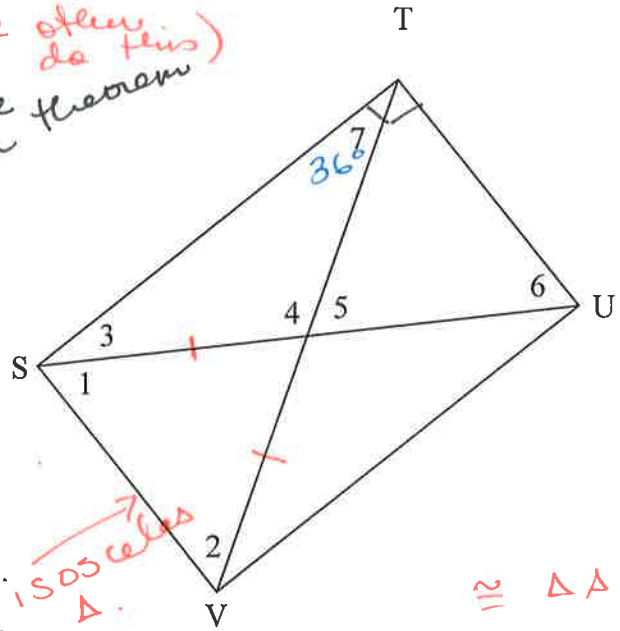
consecutive ∠s of a ▱ are supplementary.

Use rectangle STUV and the given information for problems 16-17. Show your steps and give reasons.

16. $m\angle 7 = 36$, find $m\angle 2$

(there are other ways to do this)

angle sum theorem



$m\angle 2 =$ 54°

$m\angle 7 + m\angle TSV + m\angle 2 = 180$

$m\angle TSV = 90$

$36 + 90 + m\angle 2 = 180$

$126 + m\angle 2 = 180$

$m\angle 2 = 54$

17. $m\angle 1 = x + 41$, $m\angle 2 = 3x + 15$, Find x and $m\angle 6$.

isosceles △.

$m\angle 1 = m\angle 2$

$x + 41 = 3x + 15$

$26 = 2x$

$13 = x$

$x =$ 13

$m\angle 6 =$ 54

$\cong$ △△.

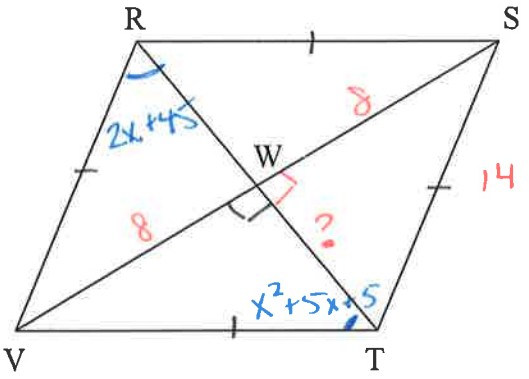
$m\angle 6 = m\angle 1$

$m\angle 6 = x + 41$

$m\angle 6 = 13 + 41$

$m\angle 6 = 54$

Quadrilateral RSTV is a rhombus. Use the figure and information for problems 18-19. Give reasons for your setups.



18. SV = 16, ST = 14, Find WT. (Leave your answer in simplified square root form)

WT = $2\sqrt{33}$

Right Δ, Pythagorean theorem.

$SW^2 + WT^2 = ST^2$

$8^2 + WT^2 = 14^2$

$64 + WT^2 = 196$

$WT^2 = 132$

$WT = \sqrt{132}$

$= 2\sqrt{33}$

19. $m\angle VRT = 2x + 45$, $m\angle RTV = x^2 + 5x + 5$, Find x.

$x =$ 5; -8

isosceles Δ b/c all 4 sides ≅.

$m\angle VRT = m\angle RTV$

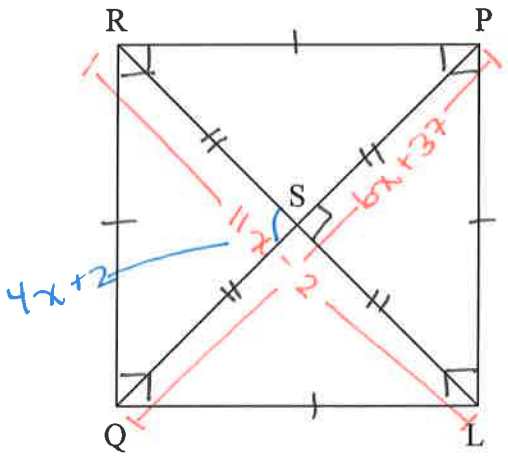
$2x + 45 = x^2 + 5x + 5$

$0 = x^2 + 5x - 2x + 5 - 45$

$0 = x^2 + 3x - 40$

$0 = (x + 8)(x - 5)$

Use square QRPL for problems 20-21 to find x. Give reasons for your setups.



20. RL = $11x + 2$
QP = $6x + 37$

$x =$ 7

diagonals are ≅.

$RL = QP$

$11x + 2 = 6x + 37$

$5x = 35$

$x = 7$.

21. $m\angle RSQ = 4x + 2$

$x =$ 22

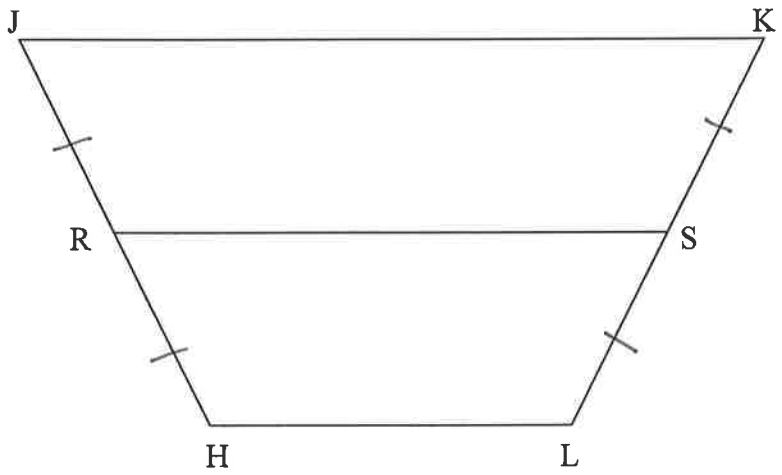
$m\angle RSQ = 90$ diagonals are ⊥

$4x + 2 = 90$

$4x = 88$

$x = 22$

Use isosceles trapezoid HJKL with median $\overline{RS}$ for problems 22-23. Give reasons for your setups.



reason enough!

$m = \frac{1}{2}(a + b)$

22. If HL = 9 and JK = 27, Find RS.

RS = 18

$RS = \frac{1}{2}(JK + HL)$

$RS = \frac{1}{2}(27 + 9)$

$RS = \frac{1}{2}(36)$

$RS = 18$

23. If JK = $7x - 7$, RS = 11, and HL = $x + 5$, Find x.

x = 3

$RS = \frac{1}{2}(JK + HL)$

$11 = \frac{1}{2}(7x - 7 + x + 5)$

$22 = 8x - 2$

$24 = 8x$

$3 = x$

For problems 24-28, fill in the blank for each statement with **ALWAYS, SOMETIMES, or NEVER.** **(Each of these is worth 1 point each.)**

24. A rectangle is Sometimes a rhombus. (if it's a square)

25. Diagonals of a parallelogram are Sometimes congruent. (if it's a rectangle)

26. A square's diagonals are perpendicular but are not congruent. never

27. Diagonals of a rectangle always bisect each other.

28. Diagonals of a parallelogram Sometimes bisect the opposite angles. (if it's a rhombus.)