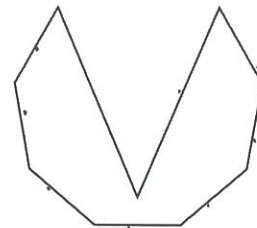


Name: Key

Date:

OPTIONAL PRACTICE TEST

1. a. Name the polygon by the number of sides. nonagon
 b. Determine whether the polygon is concave or convex. concave
 c. Determine whether the polygon is regular or not regular. not regular
2. Find the measure of each exterior angle of a regular polygon whose sum of the measures of the interior angles is 6120° .



$$\begin{aligned} 180(n-2) &= 6120 \\ n-2 &= 34 \\ n &= 36 \end{aligned}$$

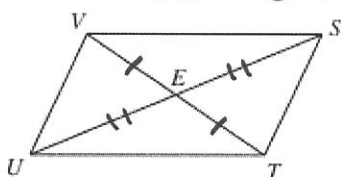
$$\frac{360}{36} = \boxed{10^\circ}$$

3. What is the sum of the exterior angles of a regular 43-gon?

$$360^\circ$$

4. STUV is a parallelogram. Find TE.

$$\begin{aligned} TE &= 4 + 2x \\ EV &= 4x - 4 \\ \text{Find TE} \end{aligned}$$

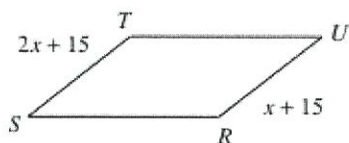


$\overline{TE} \cong \overline{EV}$ diags bisect each other!

$$\begin{aligned} 4 + 2x &= 4x - 4 \\ 8 &= 2x \\ 4 &= x \end{aligned}$$

$$\boxed{TE = 12}$$

5. STUR is a parallelogram. Find ST.

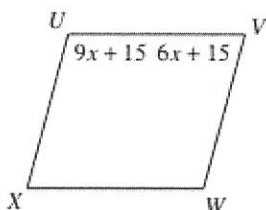


opp. sides $\cong$

$$\begin{aligned} x + 15 &= 2x + 15 \\ x &= 0 \end{aligned}$$

$$\boxed{ST = 15}$$

6. UVWX is a parallelogram. Find $m\angle V$.

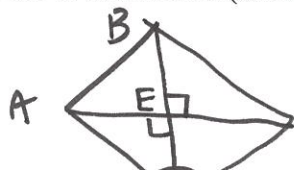


consec. $\angle$ s supp.

$$\begin{aligned} 9x + 15 + 6x + 15 &= 180 \\ 15x + 30 &= 180 \\ x &= 10 \end{aligned}$$

$$\boxed{m\angle V = 75^\circ}$$

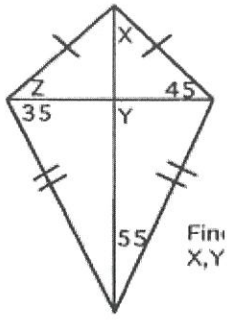
7. ABCD is a rhombus (draw it yourself!). If $m\angle ADC = 40^\circ$, find $m\angle DAC$.



$m\angle ADE = 20^\circ$ since diags bisect $\angle$ s in a rhombus

$$\boxed{m\angle DAC = 70^\circ}$$

8. Find the values of x , y , and z .

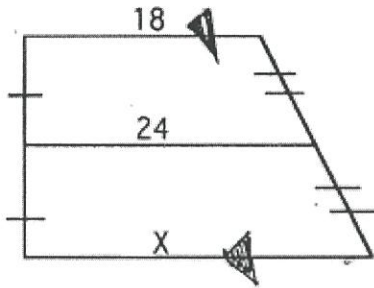


$$z = 45 \text{ (if } \triangle \rightarrow \triangle)$$

$$y = 90 \text{ (diags are } \perp \text{ in a kite)}$$

$$x = 45 \text{ (}\triangle \text{ sum thm)}$$

9. Find the value of x .

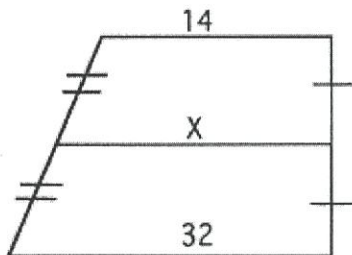


$$24 = \frac{18 + x}{2}$$

$$48 = 18 + x$$

$$\boxed{30 = x}$$

10. Find the value of x .



$$x = \frac{14 + 32}{2}$$

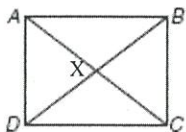
$$x = \frac{46}{2}$$

$$\boxed{x = 23}$$

11. Decide whether the statement is always, sometimes, or never true.

- A rhombus is equilateral. $\rightarrow$ always
- A rhombus is equiangular. $\rightarrow$ sometimes
- The diagonals of a rectangle are perpendicular. $\rightarrow$ sometimes
- A square is a rectangle. $\rightarrow$ always
- A kite is a square. $\rightarrow$ never

12. If $DX = 6x - 7$ and $AX = 4x + 9$, find DB .



$$6x - 7 = 4x + 9$$

$$2x = 16$$

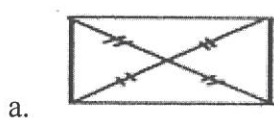
$$x = 8$$

$$DB = 2(DX)$$

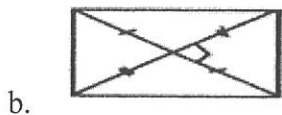
$$DB = 2(41)$$

$$\boxed{DB = 82}$$

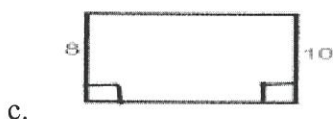
13. First, determine whether the quadrilateral is a parallelogram and if so, why. If it is a parallelogram, determine whether it is a special parallelogram (i.e. rectangle, rhombus, or square) and why.



11-gram since diags bisect each other
rectangle since diags are $\cong$



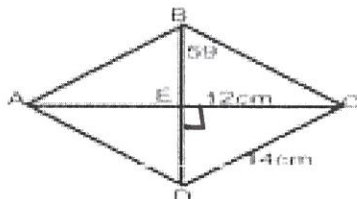
11-gram since diags bisect each other
rhombus since diags are $\perp$



not a 11-gram
(but it is a trapezoid!)

14. ABCD is a rhombus. Find the following: (in the diagram, $m\angle EBC = 59^\circ$, $EC = 12$ cm and $CD = 14$ cm.)

- $m\angle BCE$ 31°
- $m\angle BEC$ 90°
- $m\angle ABD$ 59°
- AC 24 cm
- AD 14 cm
- ED
- BD $4\sqrt{13}$



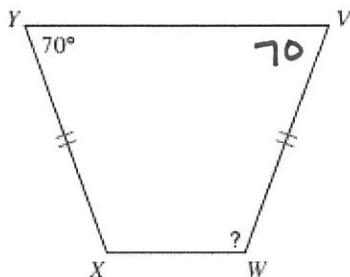
$$12^2 + x^2 = 14^2$$

$$x^2 = 52$$

$$x = 2\sqrt{13}$$

$$ED = 2\sqrt{13}$$

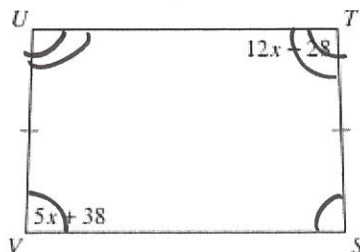
15. XYVW is a trapezoid. Find $m\angle W$.



$$70 + m\angle W = 180^\circ$$

$$m\angle W = 110^\circ$$

16. STUV is a trapezoid. Find $m\angle V$.



$$12x - 28 + 5x + 38 = 180^\circ$$

$$17x + 10 = 180$$

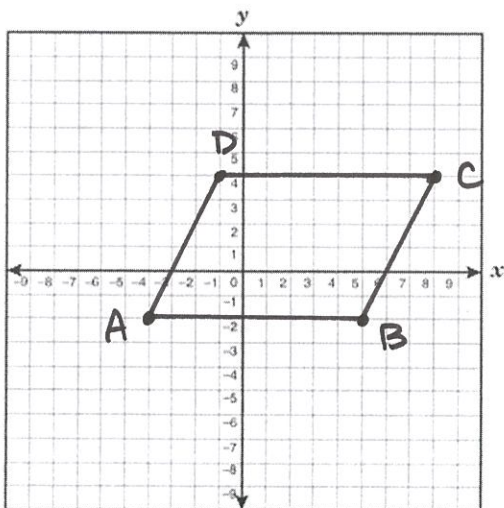
$$17x = 170$$

$$x = 10$$

$$m\angle V = 88^\circ$$

17. Write a coordinate proof to show that ABCD is a parallelogram.

A(-4, -2), B(5, -2), C(8, 4), D(-1, 4)



$$\begin{aligned} AB &= 9 & \text{slope}_{\overline{AB}} &= 0 \\ CD &= 9 & \text{slope}_{\overline{DC}} &= 0 \end{aligned}$$

since one set of opp. sides in quadrilateral ABCD are $\cong$, then they are $\parallel$. the same set of opp. sides are also $\parallel$ since they have the same slope. So, since the same set of opp. sides is both $\cong$ and $\parallel$, then ABCD is a $\parallel$ -gram

18. Write a two-column proof.

Given: SCRA is a kite with $\overline{RC} \cong \overline{RA}$

Prove: SCHA is a kite

Statements

Reasons

① SCRA is a kite with $\overline{RC} \cong \overline{RA}$

① given

② $\overline{SC} \cong \overline{SA}$

② def. of a kite

③ $\angle CRS \cong \angle ARS$
 $\angle CSH \cong \angle ASH$

③ line of symm. in kite bisects opp. $\angle$ s

④ $\overline{SH} \cong \overline{SH}$

④ reflex. prop. $\cong$

⑤ $\triangle CHS \cong \triangle AHS$

⑤ SAS $\cong$

⑥ $\overline{CH} \cong \overline{AH}$

⑥ CPLTC

⑦ SCHA is a kite

⑦ def. of a kite

