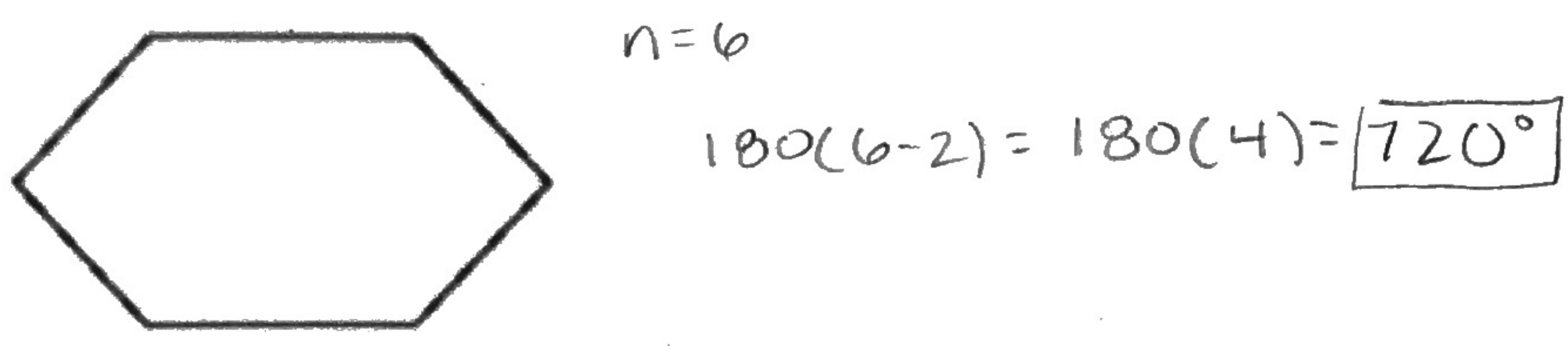


Quadrilaterals and Other Polygons Practice Problems

8.1 Angles of Polygons

1. Find the sum of the measures of the interior angles of the figure.



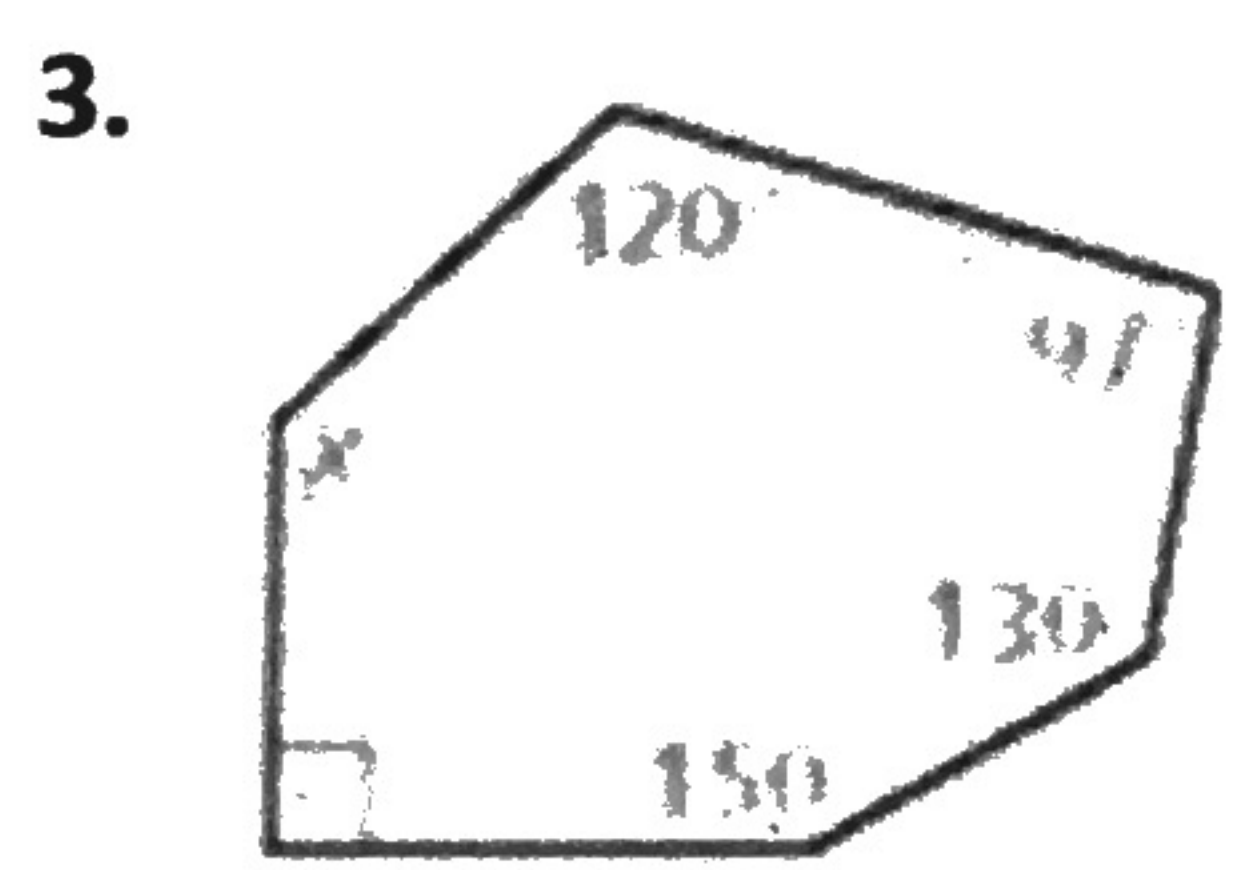
2. Find the sum of the measures of the interior angles of a regular 30-gon. Then find the measure of each interior angles and each exterior angle.

$n=30$
 $180(30-2) = 180(28) = \boxed{5040^\circ}$

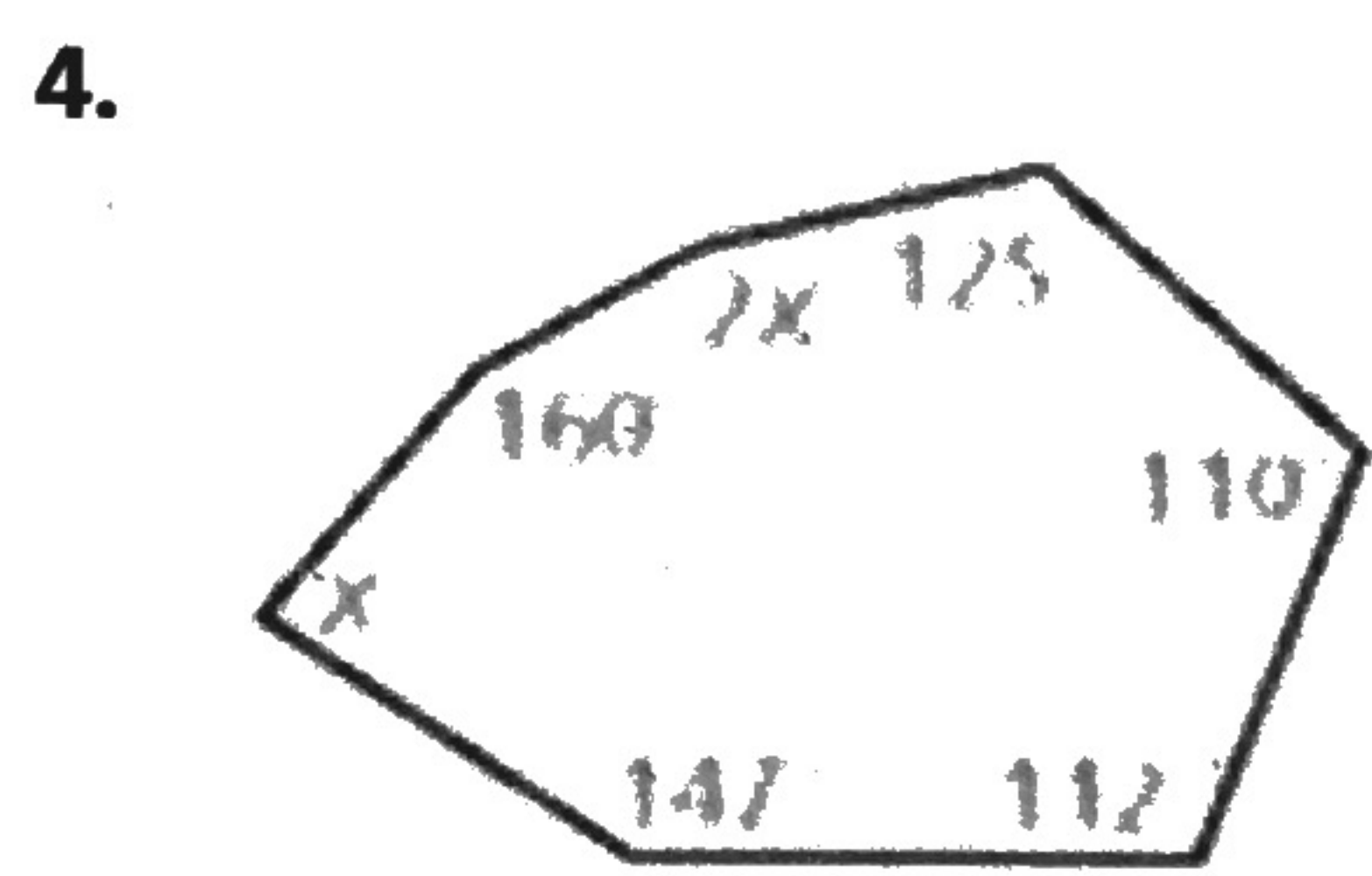
$\frac{5040^\circ}{30} = \boxed{168^\circ}$

$\frac{360^\circ}{30} = \boxed{12^\circ}$

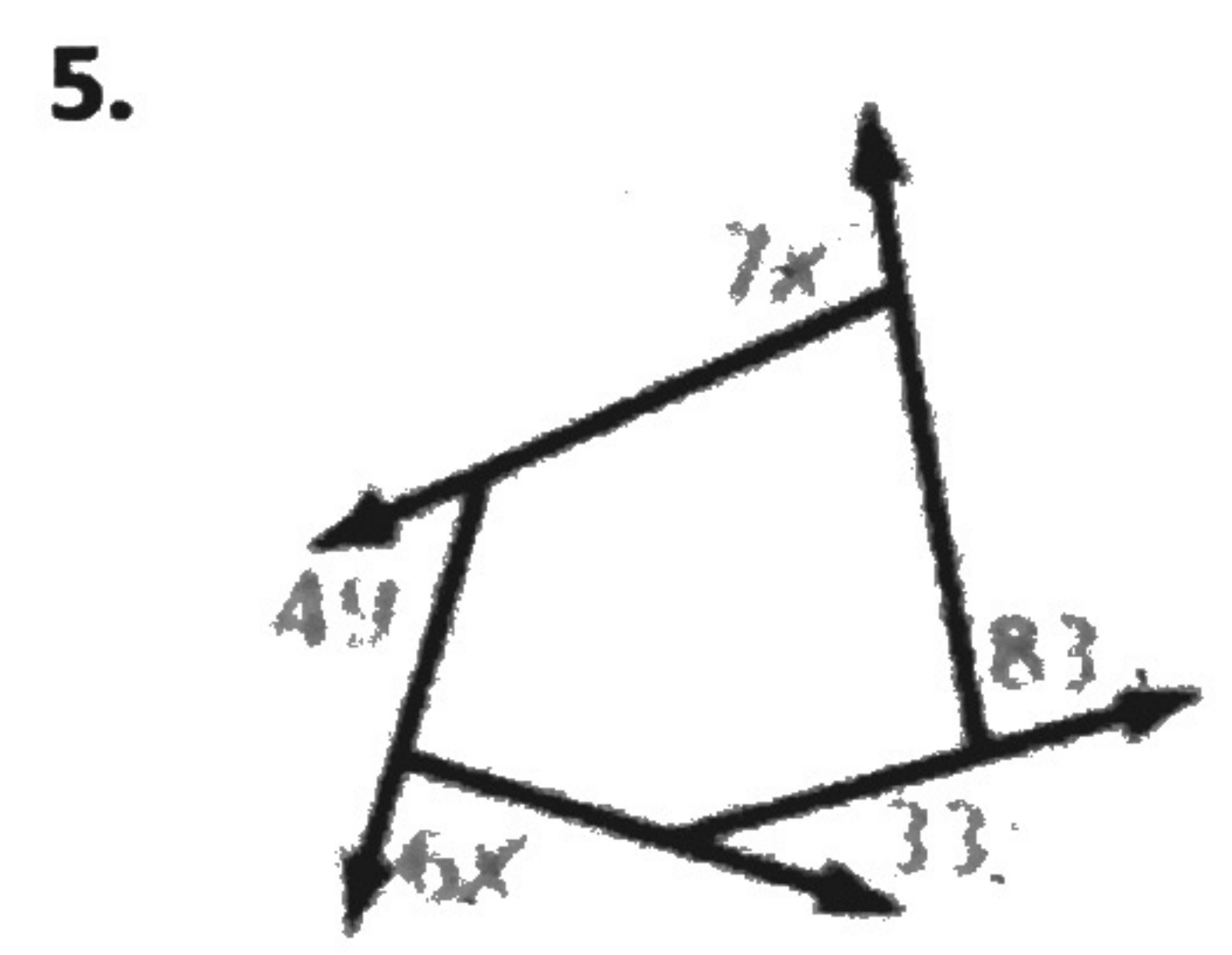
#3-5: Find the value of x.



$x + 120 + 97 + 130 + 150 + 90 = 180(6-2)$
 $x + 587 = 720$
 $x = \boxed{133^\circ}$



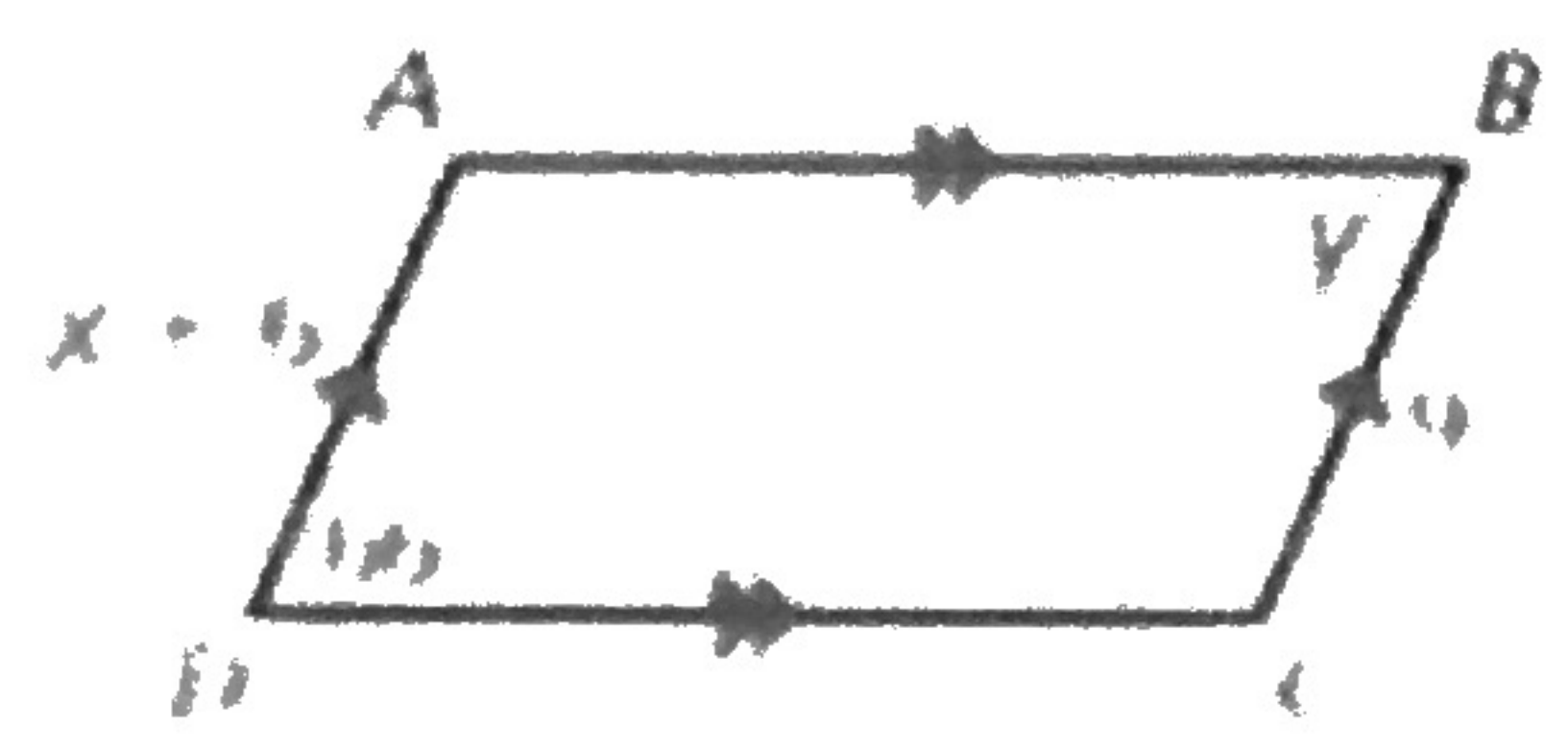
$x + 160 + 2x + 147 + 125 + 110 + 112 = 180(7-2)$
 $3x + 654 = 900$
 $3x = 246$
 $x = \boxed{82^\circ}$



$49 + 6x + 33 + 83 = 360$
 $13x + 165 = 360$
 $13x = 195$
 $x = \boxed{15^\circ}$

8.2 Properties of Parallelograms

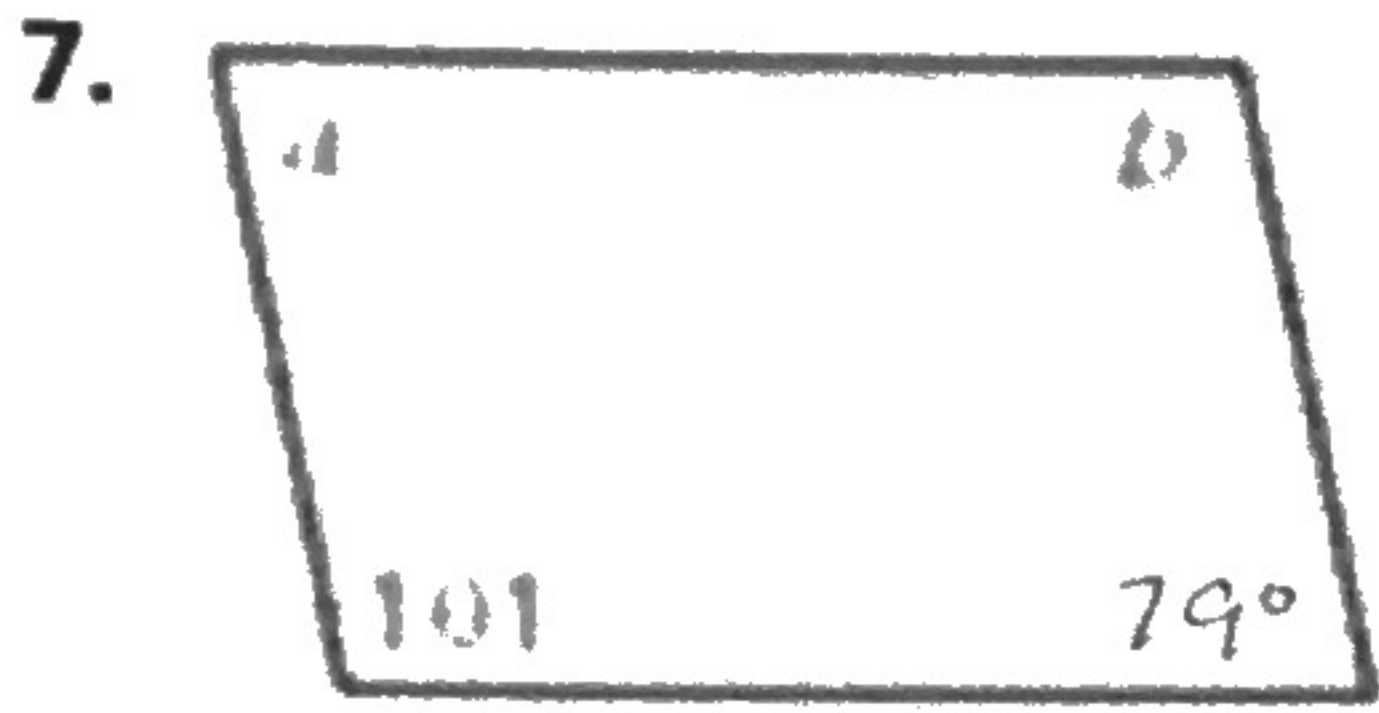
6. Find the values of x and y.



$y = 66^\circ$

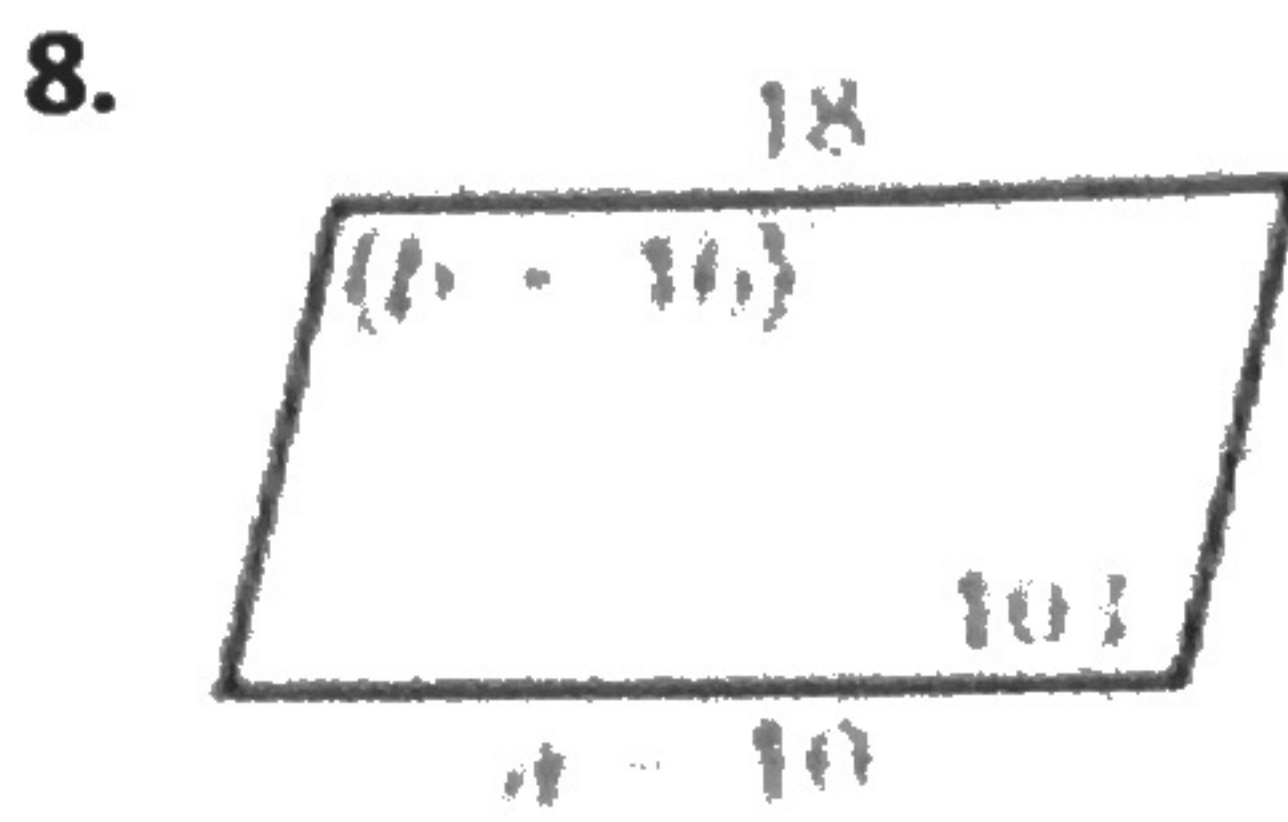
$x + 6 = 9$
 $x = \boxed{3}$

#7-9: Find the value of each variable in the parallelogram.



$b = 101^\circ$

$a = 79^\circ$

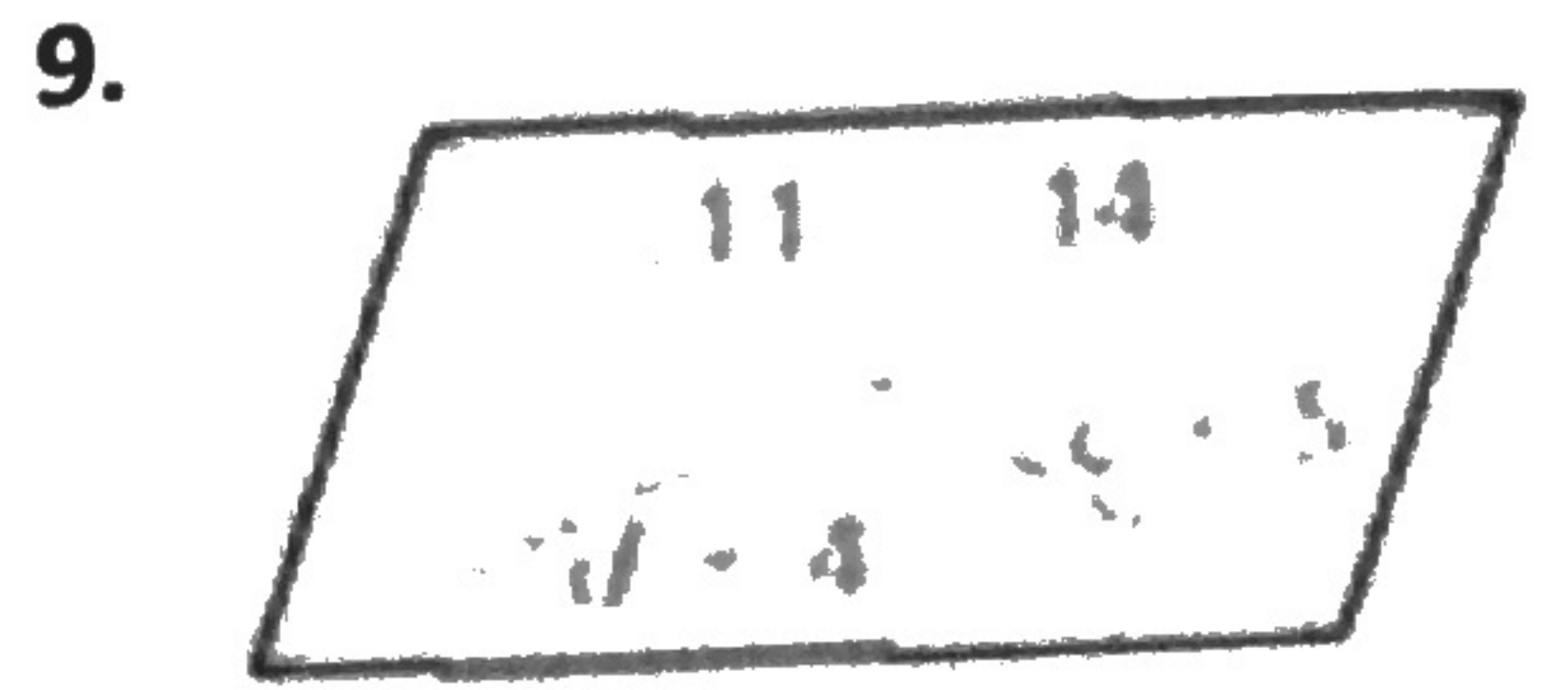


$a - 10 = 18$

$a = 28$

$b + 16 = 103$

$b = 87^\circ$



$c + 5 = 11$

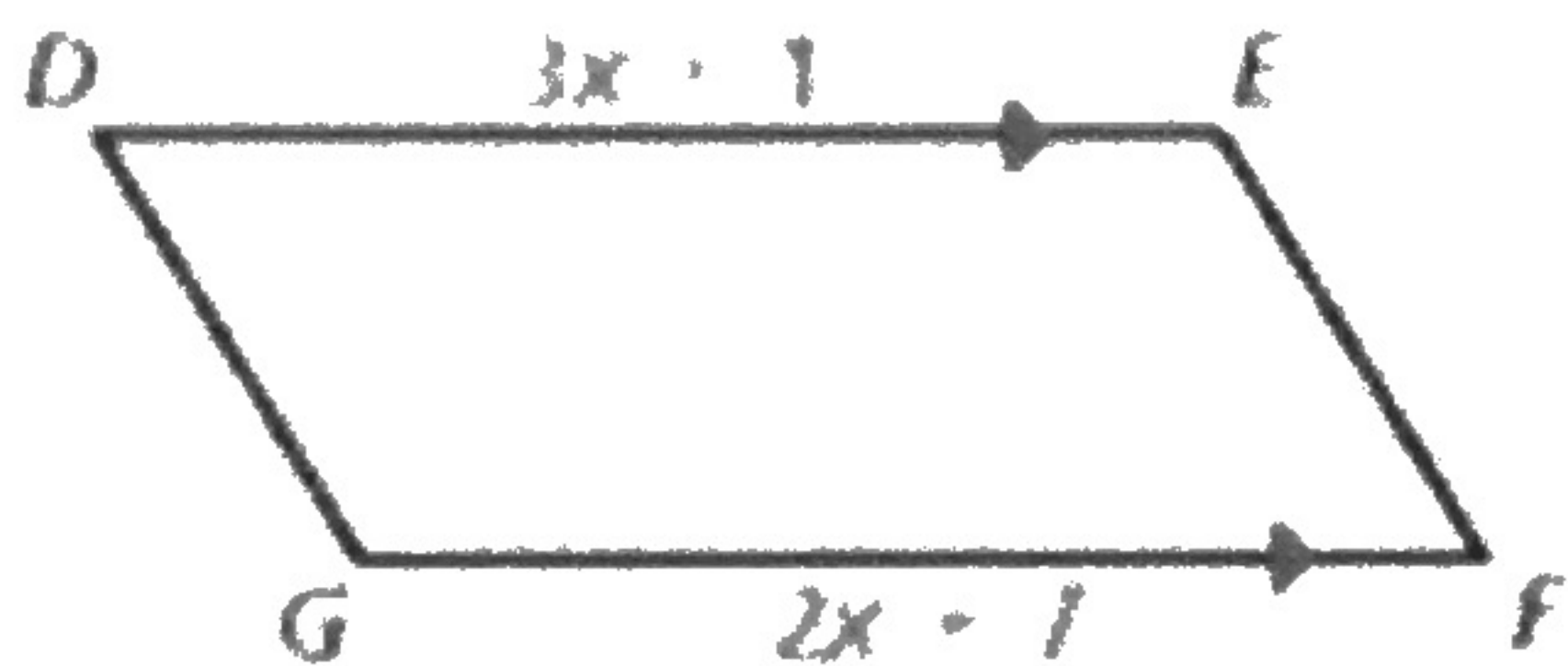
$c = 6$

$d + 4 = 14$

$d = 10$

8.3 Proving that a Quadrilateral is a Parallelogram

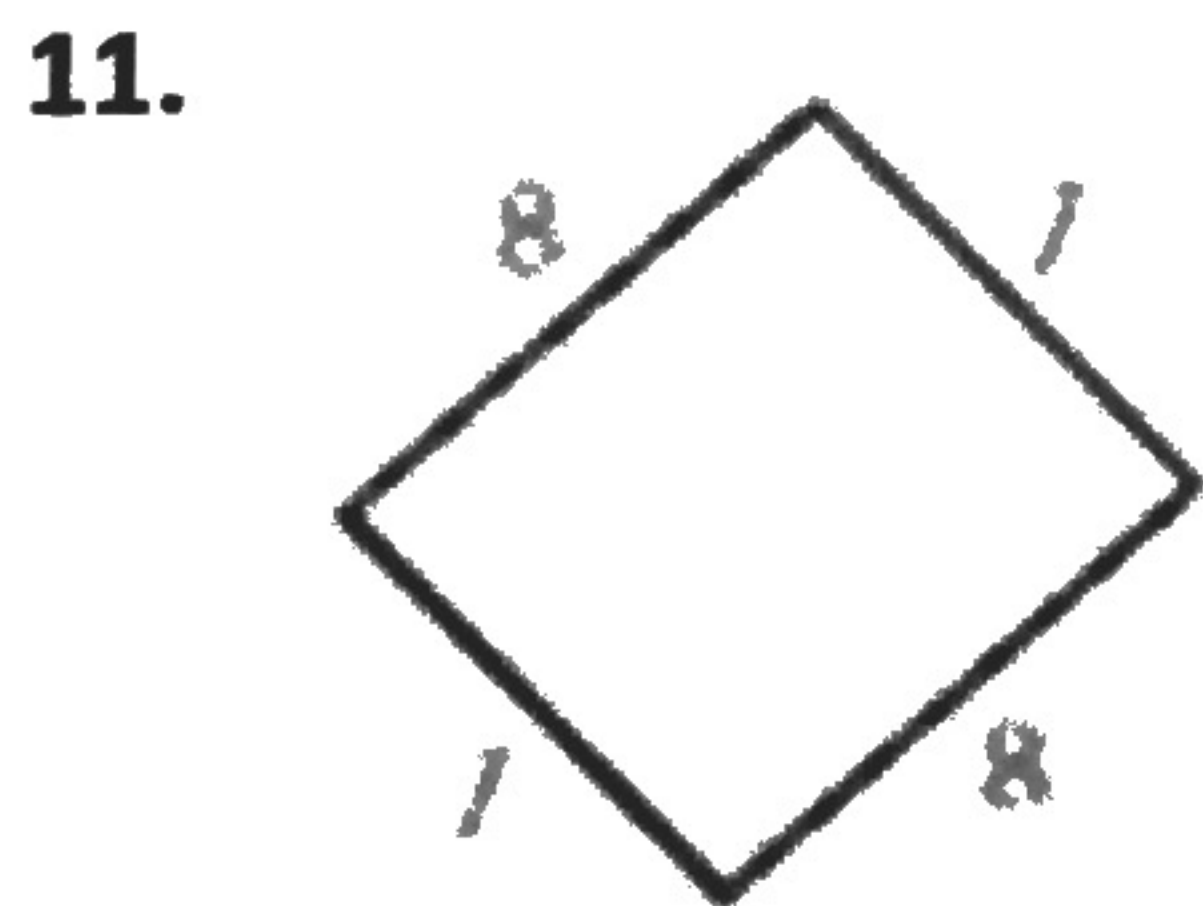
10. For what value of x is quadrilateral $DEFG$ a parallelogram?



$3x + 1 = 2x + 1$

$x = 6$

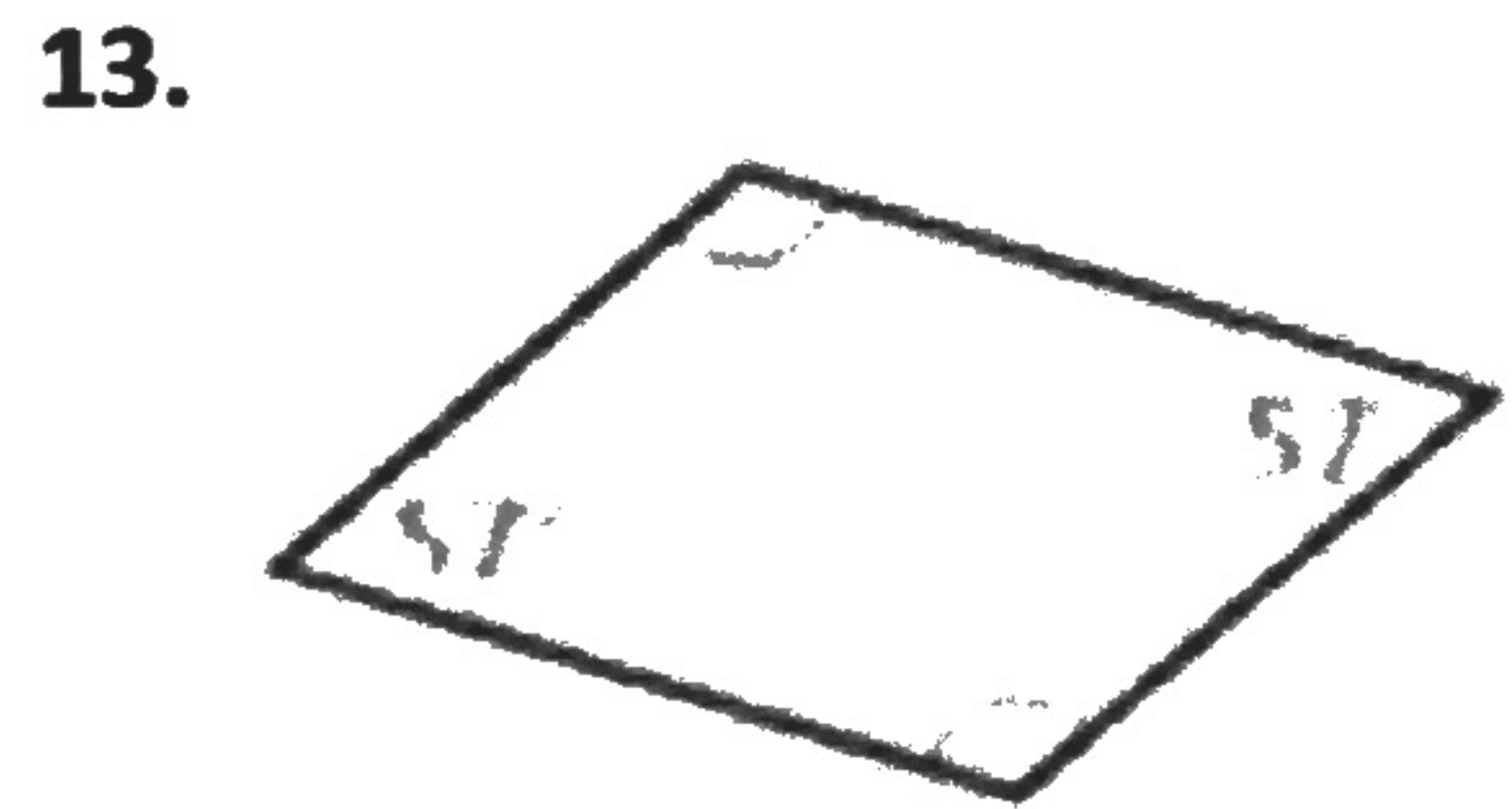
#11-13: State which reason you can use to show that the quadrilateral is a parallelogram.



opposite sides are congruent

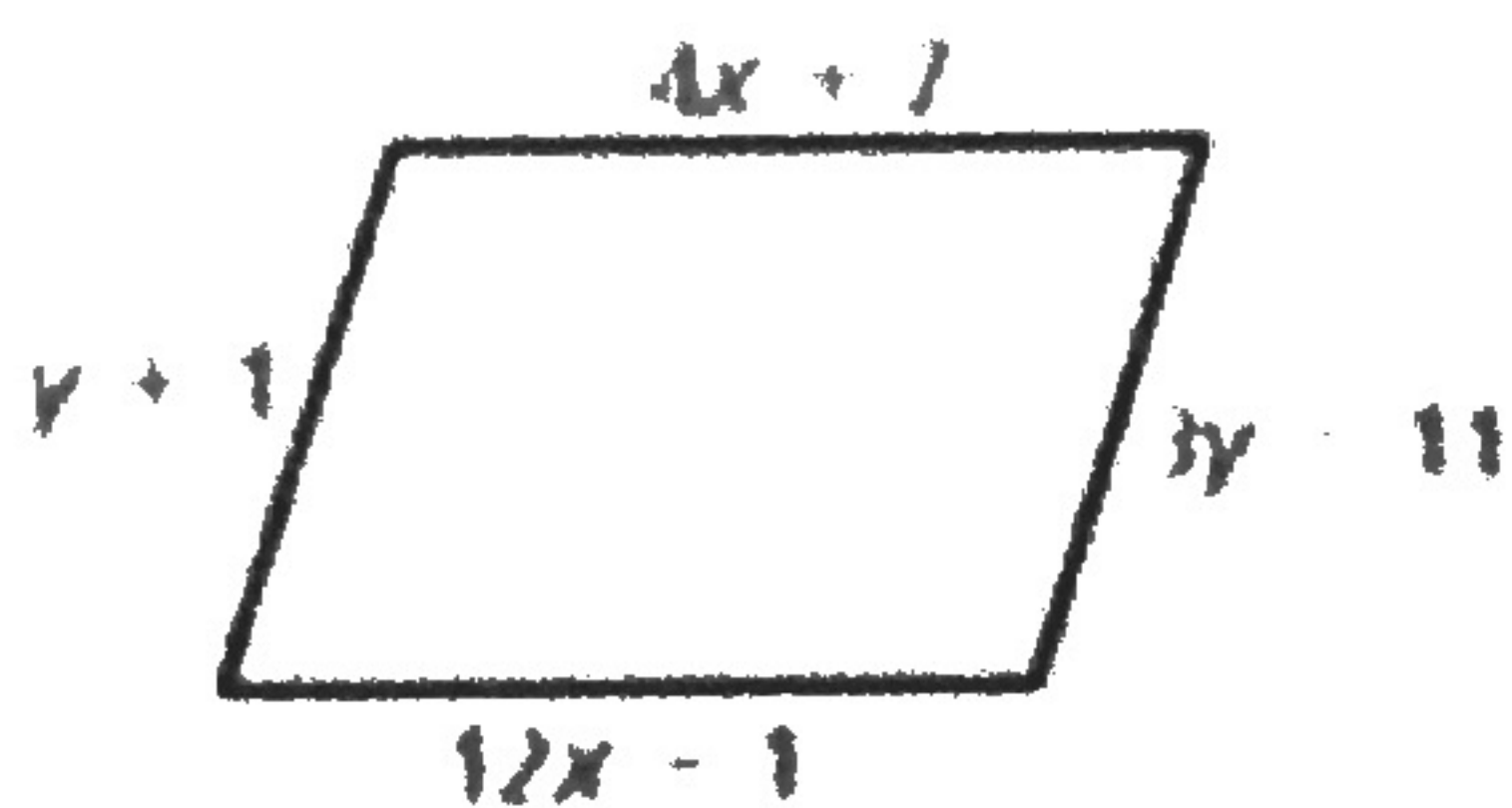


diagonals bisect each other



opposite angles are congruent

14. Find the values of x and y that make the quadrilateral a parallelogram.



$y + 1 = 3y - 11$

$12 = 2y$

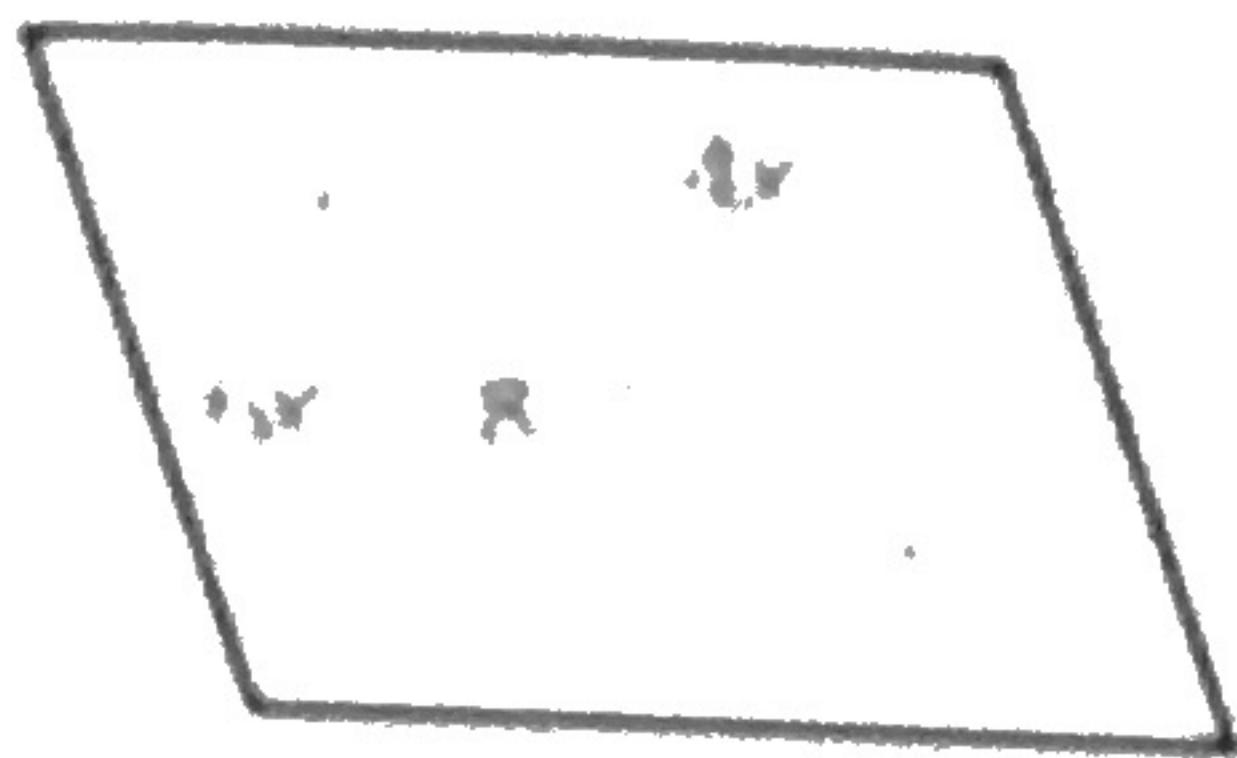
$y = 6$

$4x + 7 = 12x - 1$

$8 = 8x$

$x = 1$

15. Find the value of x that makes the quadrilateral a parallelogram.



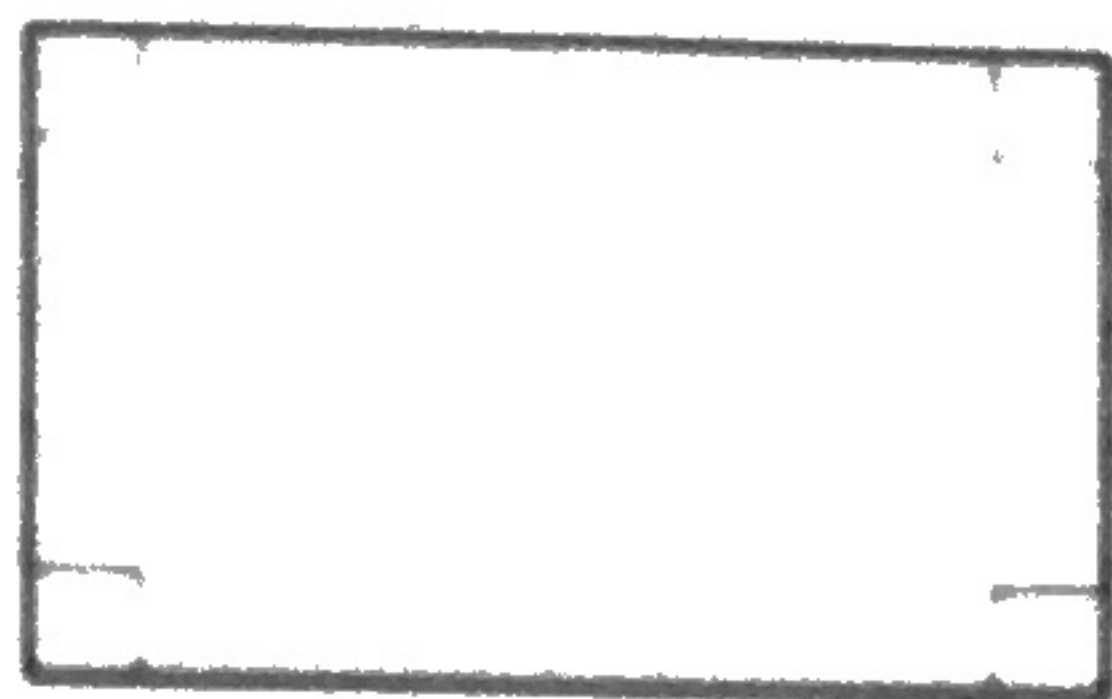
$$6x - 8 = 4x$$

$$-8 = -2x$$

$$\boxed{4 = x}$$

8.4 Properties of Special Parallelograms

16. Classify the special quadrilateral. Explain your reasoning.



rectangle because the quadrilateral is a parallelogram (opp. \angle 's \cong) with all right \angle 's.

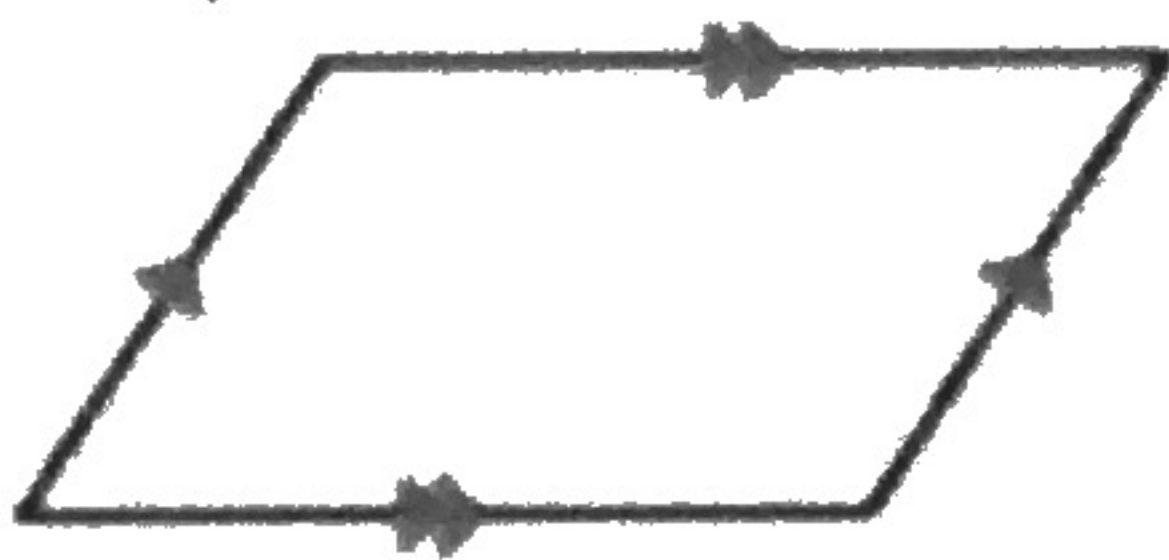
#17-19: Classify the special quadrilateral. Explain your reasoning.

17.



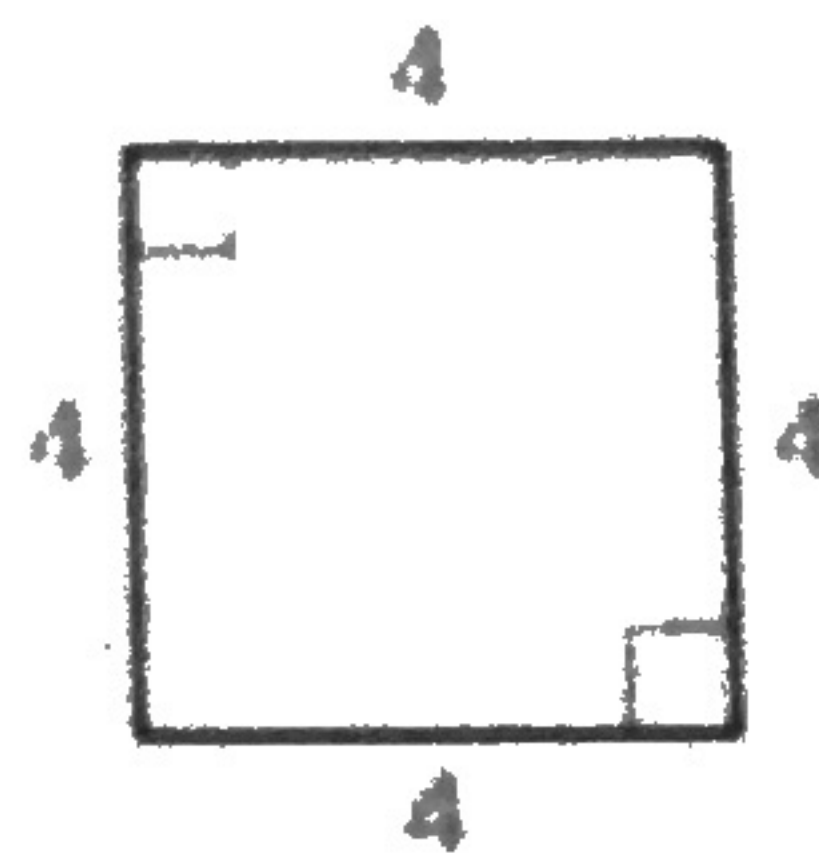
need to know opp. sides \parallel to prove rhombus

18.



parallelogram because opposite sides are parallel

19.



square because the quad. is a \square (opp. sides \cong) with all sides / \angle 's \cong

20. Find the lengths of the diagonals of rectangle $WXYZ$ where $WY = -2x + 34$ and $XZ = 3x - 26$.

$$WY = XZ$$

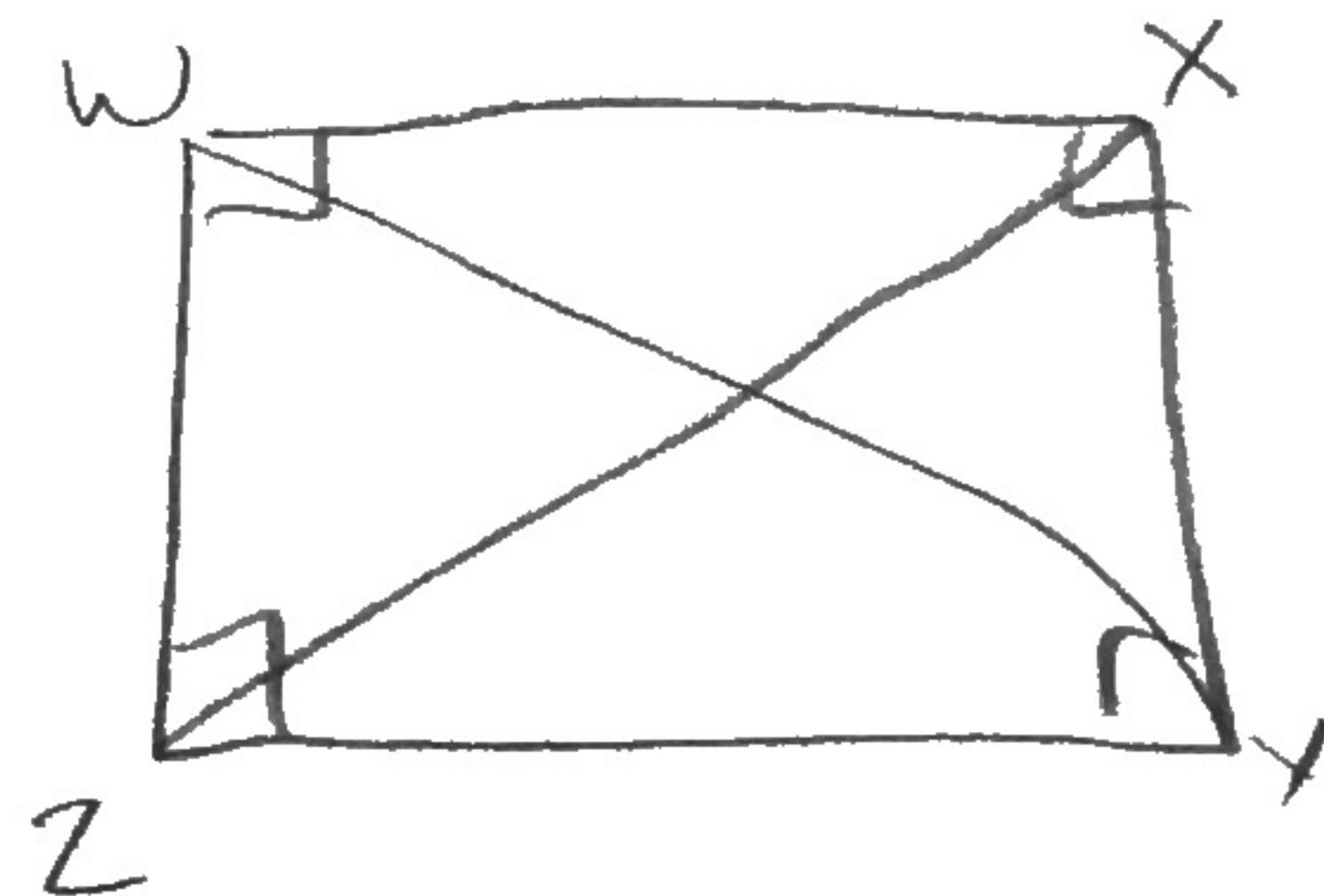
$$-2x + 34 = 3x - 26$$

$$60 = 5x$$

$$12 = x$$

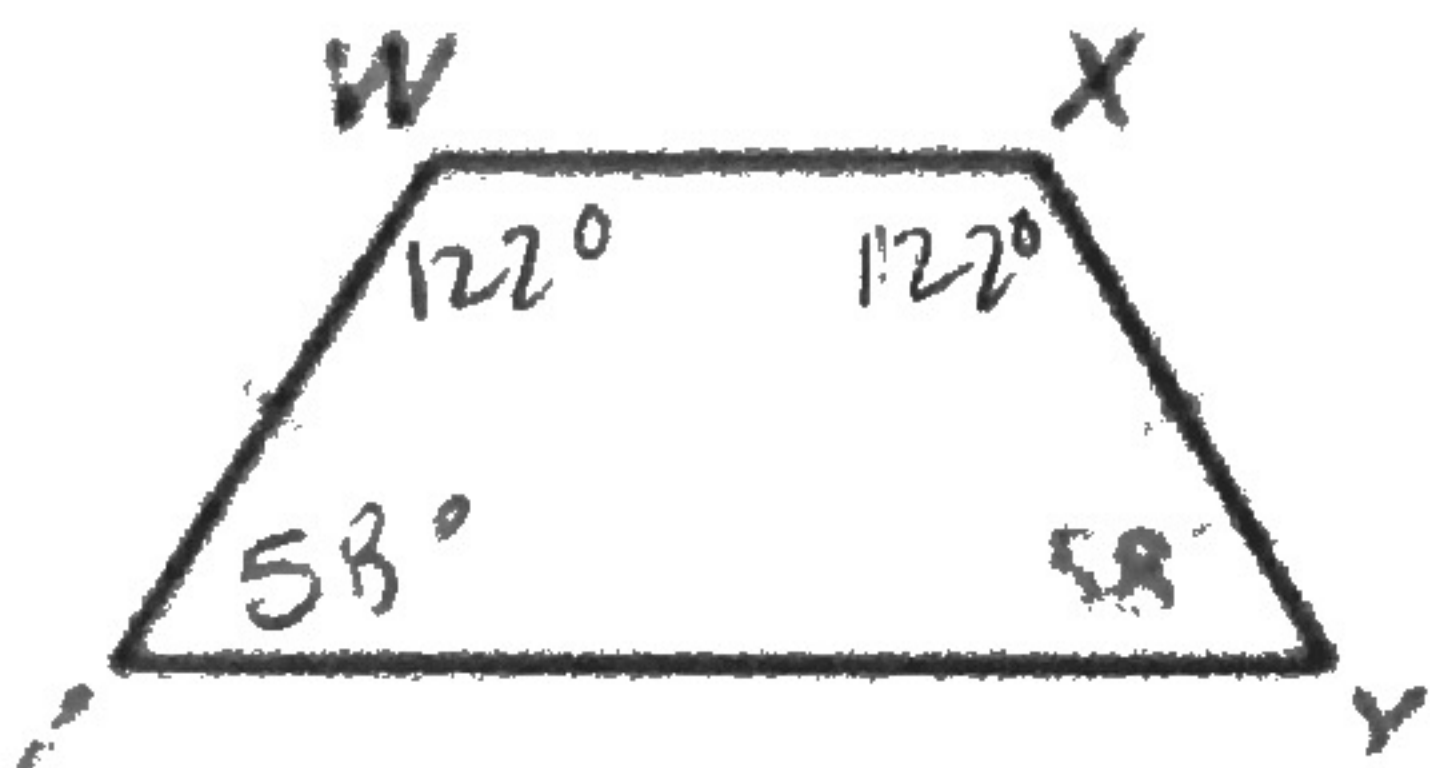
$$WY = -2(12) + 34 = \boxed{10}$$

$$XZ = 3(12) - 26 = \boxed{10}$$



8.5 Properties of Trapezoids and Kites

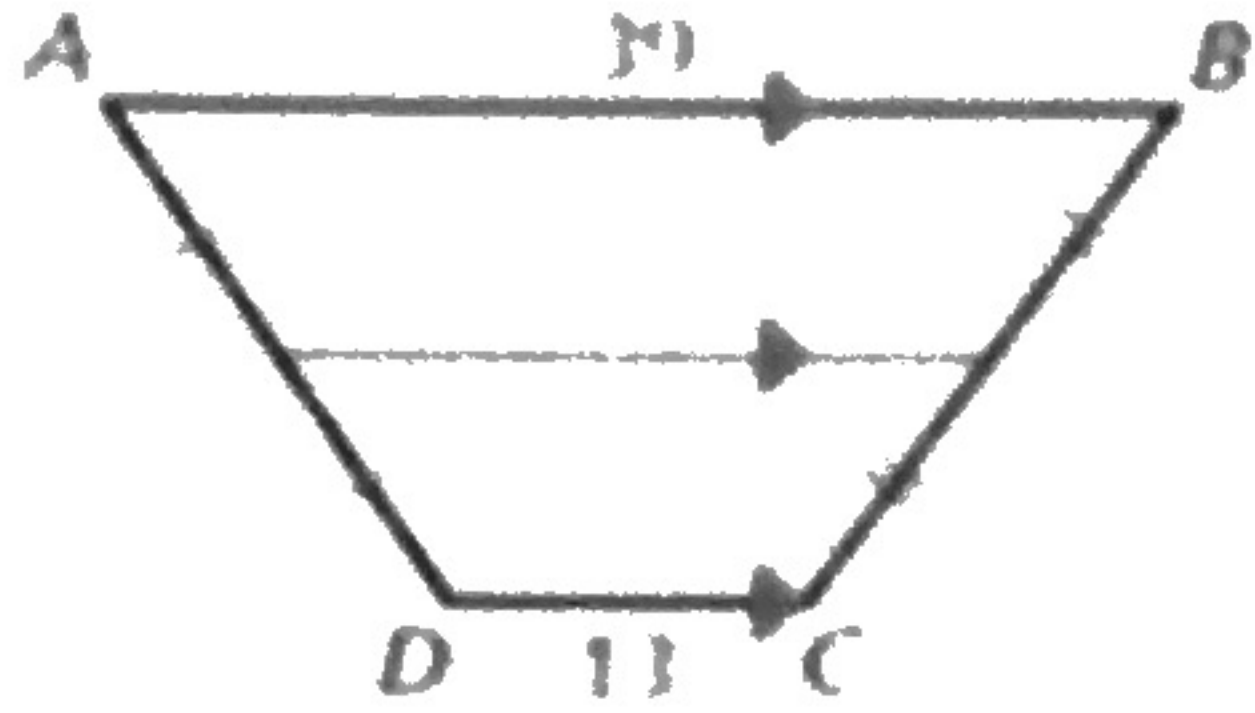
20. Find the measure of each angle in the isosceles trapezoid $WXYZ$.



$$\boxed{m\angle Z = 58^\circ}$$

$$\boxed{m\angle W = m\angle X = 122^\circ}$$

21. Find the length of the midsegment of trapezoid $ABCD$.



$$\frac{13 + 39}{2} = \boxed{26}$$

22. A kite has angle measures of $7x^\circ$, 65° , 85° , and 105° . Find the value of x . What are the measures of the angles that are congruent?

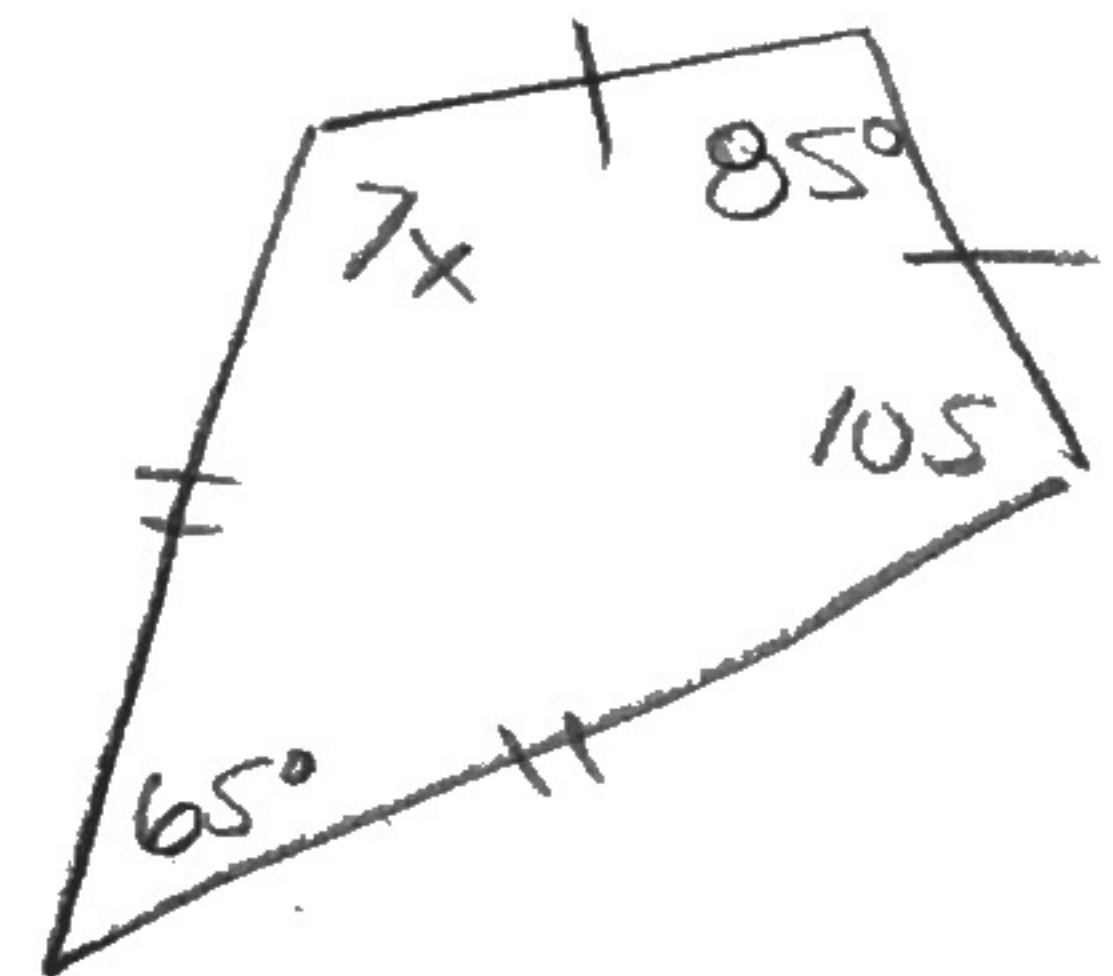
$$7x + 65 + 85 + 105 = 360$$

$$7x + 255 = 360$$

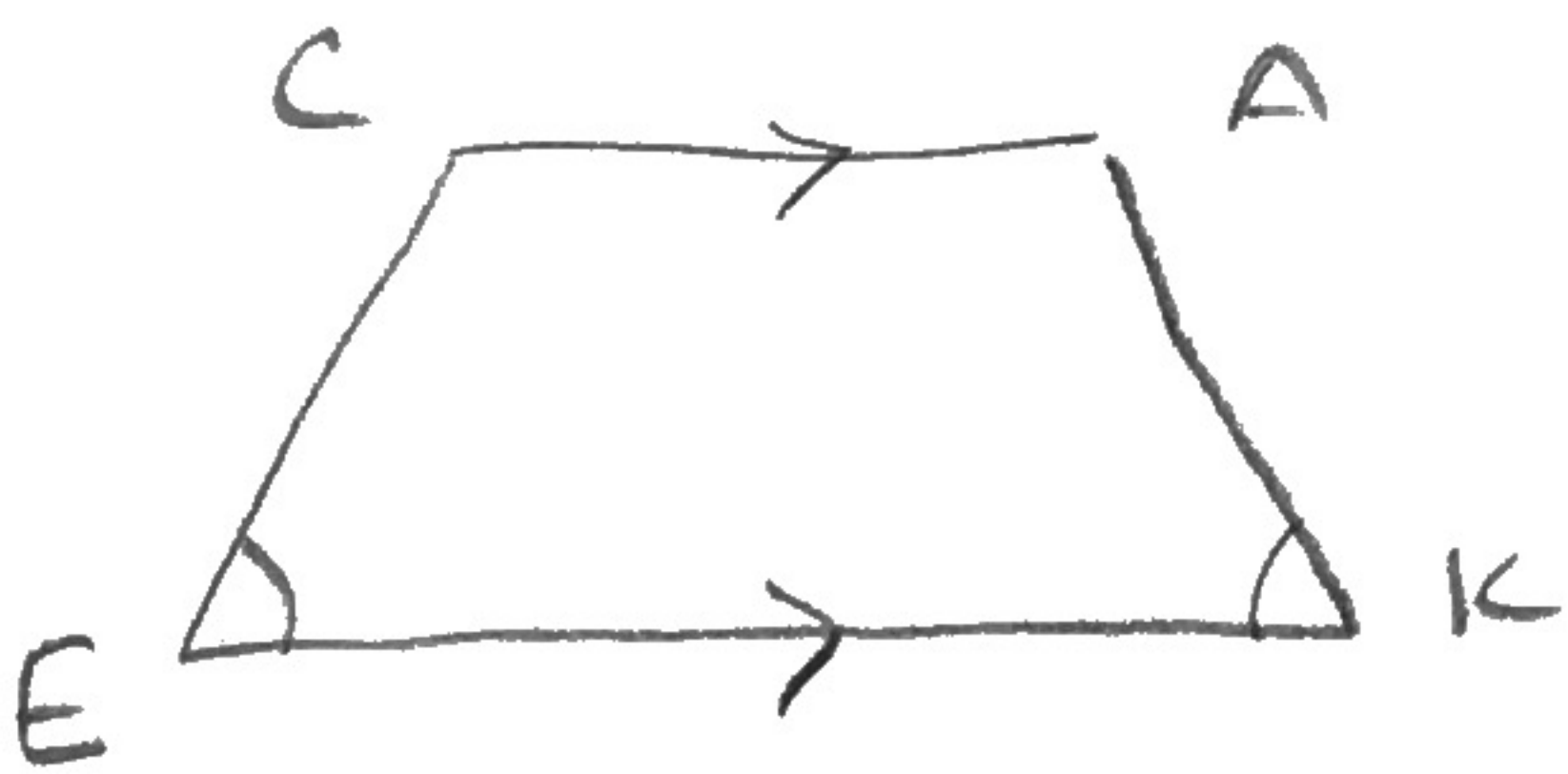
$$7x = 105$$

$$\boxed{x = 15}$$

$$7(15) = \boxed{105^\circ}$$



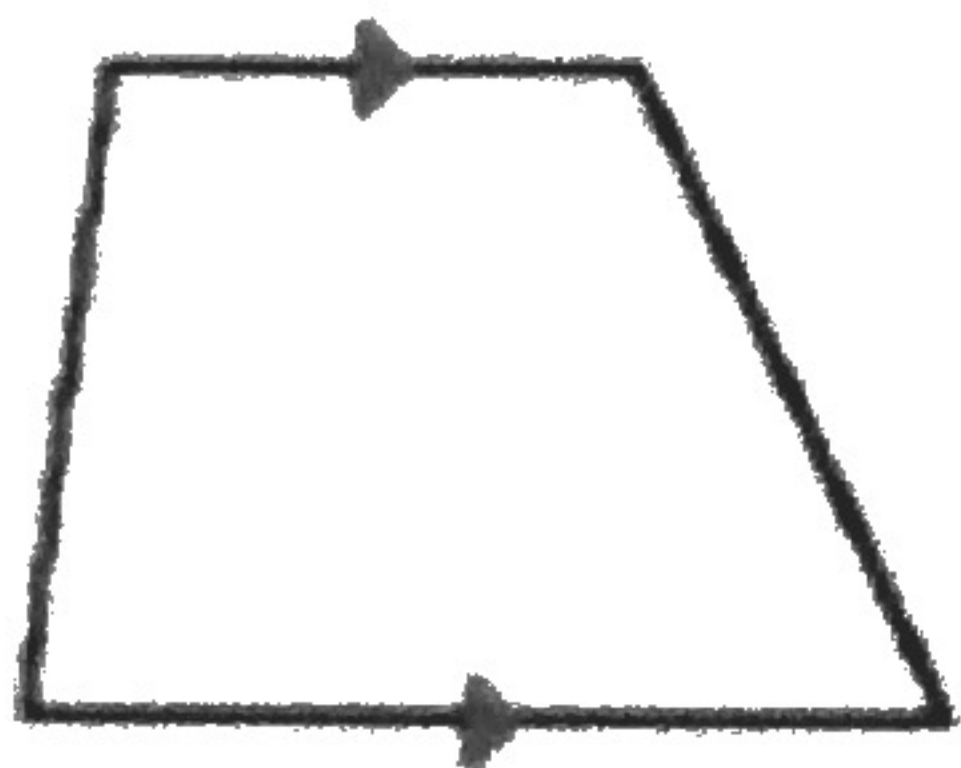
23. Quadrilateral $CAKE$ is a trapezoid with one pair of congruent base angles. Is $CAKE$ an isosceles trapezoid? Explain your reasoning.



Yes because $\angle C$ and $\angle E$, and $\angle A$ and $\angle K$ are consecutive interior angles that are supplementary, and $\angle E \cong \angle C$ so by the \cong supplements theorem $\angle C \cong \angle A$.

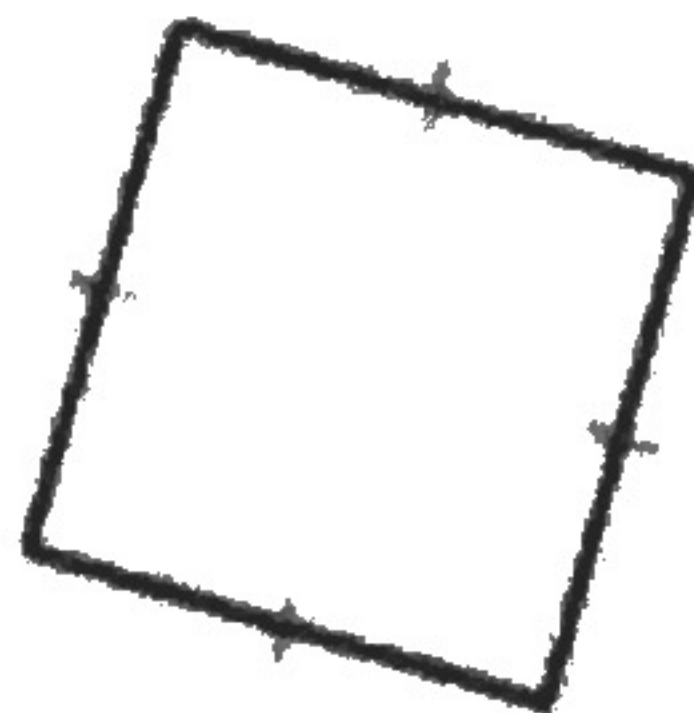
#24-26: Give the most specific name for the quadrilateral. Explain your reasoning.

24.



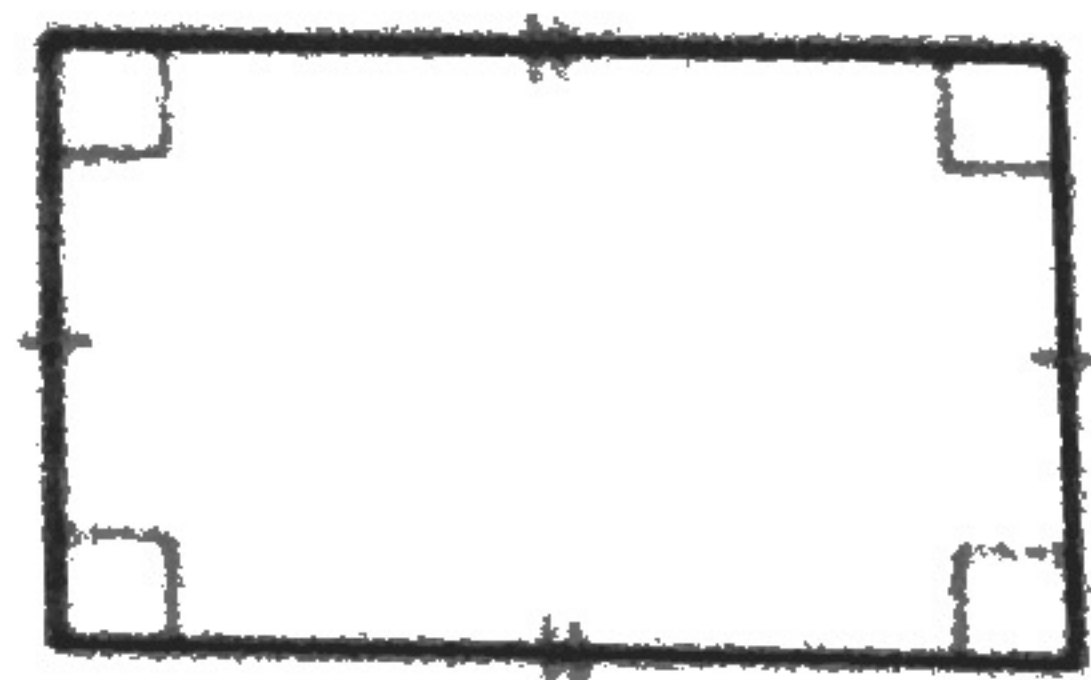
trapezoid because quadrilateral with one pair of parallel opposite sides

25.



need to know opp. sides \parallel to prove rhombus

26.



rectangle because parallelogram (opp. sides/c's \cong) with all right angles