

7.4 Quadrilaterals 3/2

* quadrilateral: ^{any} closed 4-sided polygon (many sided shape)
all 4 angles add up to 360°

* parallel: 2 lines that go the SAME DIRECTION
never intersect (cross)

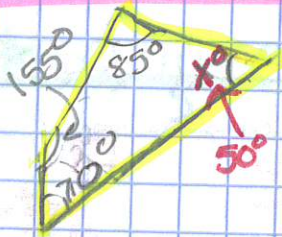
|| ← symbol for parallel

* perpendicular: 2 lines intersect

@ 90° angles
↖ right angle

⊥ ← symbol for perpendicular

Ex. 1 Find the missing angle.



$$x^\circ + 155^\circ + 85^\circ + 70^\circ = 360^\circ$$

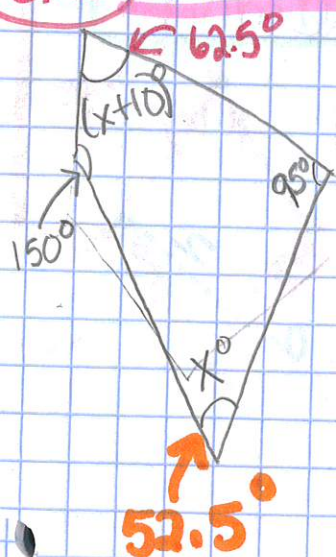
① write equation

$$x^\circ + \cancel{310^\circ} = 360^\circ$$
$$x^\circ = 360^\circ - 310^\circ$$
$$x = 50^\circ$$

② combine like terms

③ solve for x

Ex. 2 Find the unknown angle.

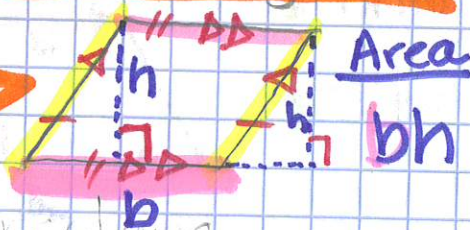


$$x^\circ + 10^\circ + 95^\circ + x^\circ + 150^\circ = 360^\circ$$

$$2x^\circ + \cancel{255^\circ} = 360^\circ$$
$$2x^\circ = 360^\circ - 255^\circ$$
$$2x^\circ = 105^\circ$$
$$x^\circ = 52.5^\circ$$
$$x + 10 = 62.5^\circ$$
$$52.5 + 10 =$$

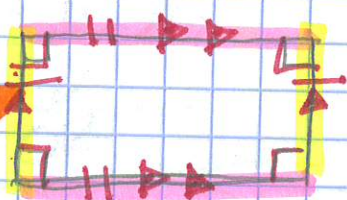
Types of Quadrilaterals

Parallelogram



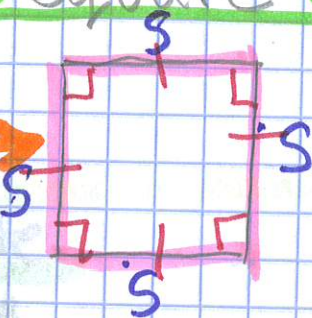
opposite sides (top & bottom or left & right) are (||) and congruent parallel

rectangle



a parallelogram w/ 4 right angles. adjacent lines are perpendicular \perp

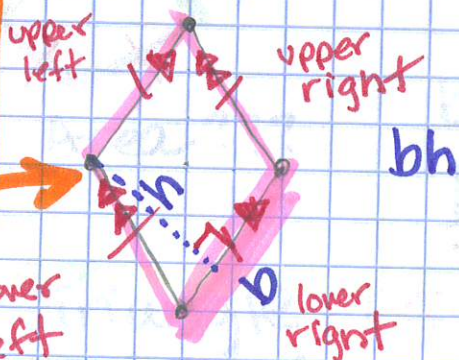
square



a rectangle (which is also a parallelogram) w/ 4 congruent sides (same size)

square: rectangle w/ 4 same side
rhombus w/ 4 right angles

rhombus



a parallelogram w/ 4 congruent sides \uparrow the same

Non-Parallelograms

Trapezoid



* only ONE pair of parallel sides.

* the parallel lines are called the bases (base 1 & base 2)

* They are Always the bases even if they aren't the top & bottom.

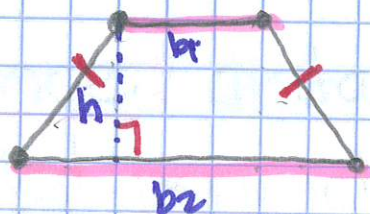
Area

$$\frac{(b_1 + b_2)h}{2}$$

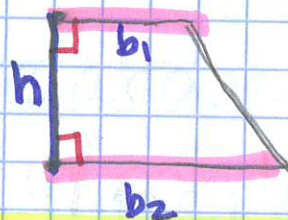
OR

$$\frac{1}{2} (b_1 + b_2)h$$

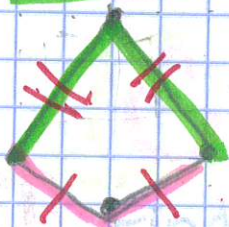
Isosceles Trapezoid



Right Trapezoid



Kite



Area ???

* No parallel sides

* 2 pair of congruent sides (same size)

but adjacent (next to) each other

NOT opposite each other.

Triangle (NOT quadrilateral)



Area

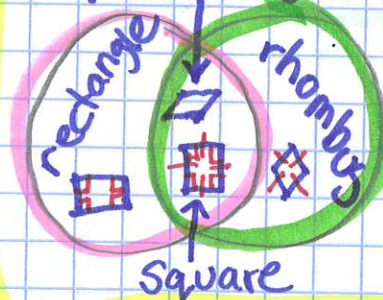
$$\frac{bh}{2}$$

OR

$$\frac{1}{2} \cdot b \cdot h$$

Quadrilaterals

parallelograms



trapezoid

Kite