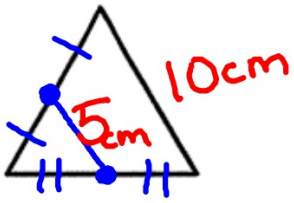
Two endpoints

Middle of a segment

Midsegment:

A segment that connects the midpoints of two sides of the triangle.

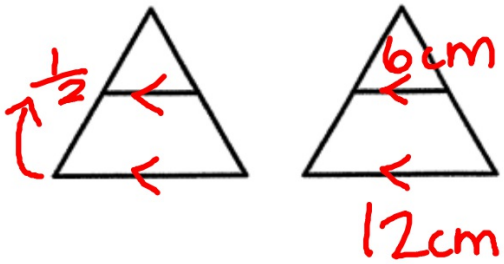


Midsegment

Never Touch

Midsegment Theorem:

The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long as that side.



1 Use ΔABC, where X, Y, Z are midpoints of the sides.

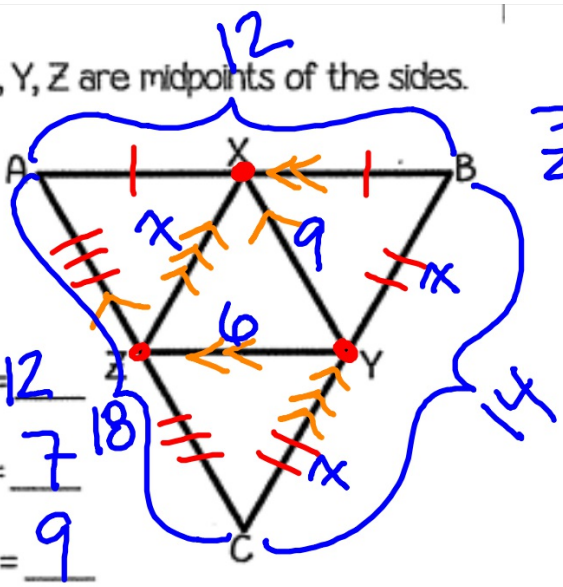
a) $\overline{XY} \parallel$ $\overline{AC}$

b) $\overline{CB} \parallel$ $\overline{XZ}$

c) If $\overline{ZY} = 6$, then $\overline{AB} =$ 12

d) If $\overline{CY} = 7$, then $\overline{ZX} =$ 7

e) If $\overline{AC} = 18$, then $\overline{XY} =$ 9



12

$\overline{ZY} \parallel \overline{AB}$

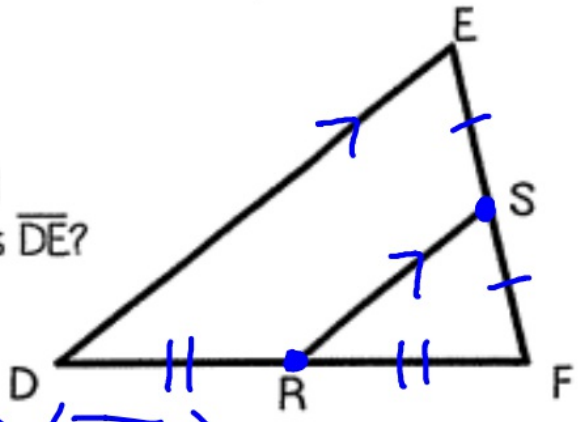
14

p. 24 Midsegment Theorem

2 In the diagram below, $\overline{RS}$ is the midsegment of ΔDEF.

a) If $\overline{RS}$ is $4x + 5$ and $\overline{DE}$ is $3x + 25$, what is $\overline{RS}$?

b) If $\overline{DE} = 2x + 12$ and $\overline{RS} = 2x - 2$, what is $\overline{DE}$?



a) $\overline{DE} = 2(\overline{RS})$

$3x+25 = 2(4x+5)$

$3x+25 = 8x+10$

$-3x \quad -3x$

$25 = 5x + 10$

$-10 \quad -10$

$\frac{15}{5} = \frac{5x}{5}$

$3 = x$

$\overline{RS} = 4(3) + 5$

$\boxed{\overline{RS} = 17}$

b) $\overline{DE} = 2(\overline{RS})$

$2x+12 = 2(2x-2)$

$2x+12 = 4x-4$

$-2x \quad -2x$

$12 = 2x-4$

$+4 \quad +4$

$\frac{16}{2} = \frac{2x}{2}$

$8 = x$

$\overline{DE} = 2(8)+12$

$\boxed{\overline{DE} = 28}$ ∴