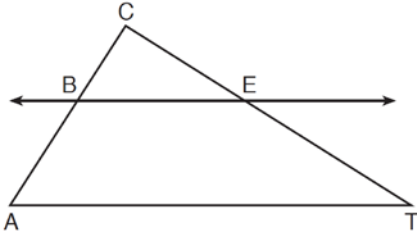


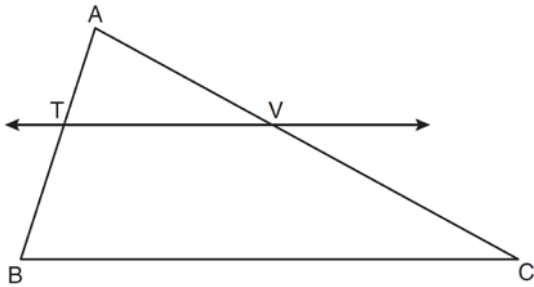
G.SRT.B.5: Side Splitter Theorem 1a

- 1 In the diagram below of $\triangle ACT$, $\overleftrightarrow{BE} \parallel \overleftrightarrow{AT}$.



If $CB = 3$, $CA = 10$, and $CE = 6$, what is the length of \overline{ET} ?

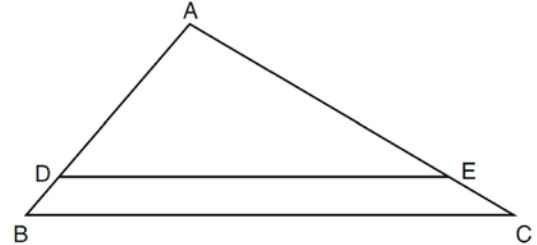
- 1) 5
 - 2) 14
 - 3) 20
 - 4) 26
- 2 In the diagram below of $\triangle ABC$, $\overleftrightarrow{TV} \parallel \overleftrightarrow{BC}$, $AT = 5$, $TB = 7$, and $AV = 10$.



What is the length of \overline{VC} ?

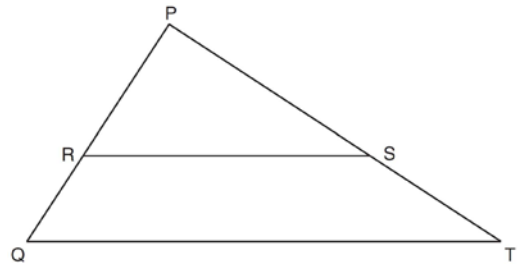
- 1) $3\frac{1}{2}$
- 2) $7\frac{1}{7}$
- 3) 14
- 4) 24

- 3 In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$.



If $AB = 10$, $AD = 8$, and $AE = 12$, what is the length of \overline{EC} ?

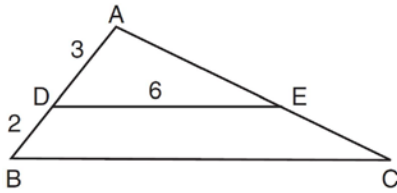
- 1) 6
 - 2) 2
 - 3) 3
 - 4) 15
- 4 Triangle PQT with $\overline{RS} \parallel \overline{QT}$ is shown below.



If $PR = 12$, $RQ = 8$, and $PS = 21$, what is the length of \overline{PT} ?

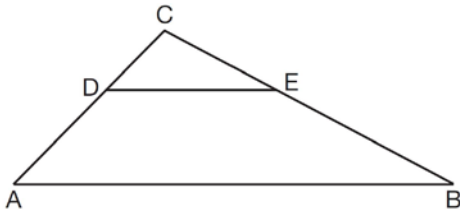
- 1) 14
- 2) 17
- 3) 35
- 4) 38

- 5 In the diagram of $\triangle ABC$ below, $\overline{DE} \parallel \overline{BC}$, $AD = 3$, $DB = 2$, and $DE = 6$.



What is the length of \overline{BC} ?

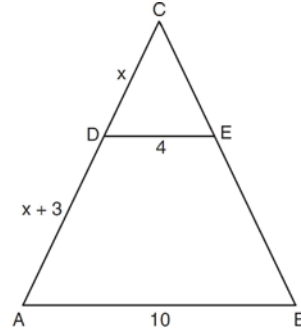
- 1) 12
 - 2) 10
 - 3) 8
 - 4) 4
- 6 In the diagram of $\triangle ABC$ below, $\overline{DE} \parallel \overline{AB}$.



If $CD = 4$, $CA = 10$, $\overline{CE} = x + 2$, and $EB = 4x - 7$, what is the length of \overline{CE} ?

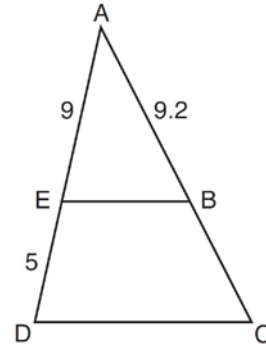
- 1) 10
- 2) 8
- 3) 6
- 4) 4

- 7 In the diagram below of $\triangle ABC$, $\overline{CDA} \parallel \overline{CEB}$, $\overline{DE} \parallel \overline{AB}$, $DE = 4$, $AB = 10$, $CD = x$, and $DA = x + 3$.



What is the value of x ?

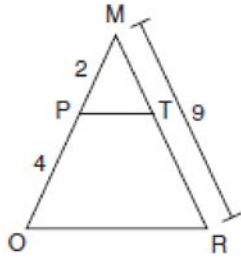
- 1) 0.5
 - 2) 2
 - 3) 5.5
 - 4) 6
- 8 In the diagram of $\triangle ADC$ below, $\overline{EB} \parallel \overline{DC}$, $AE = 9$, $ED = 5$, and $AB = 9.2$.



What is the length of \overline{AC} , to the nearest tenth?

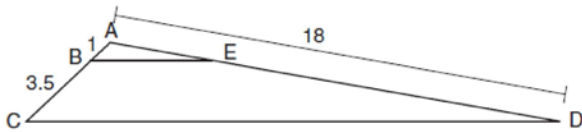
- 1) 5.1
- 2) 5.2
- 3) 14.3
- 4) 14.4

- 9 Given $\triangle MRO$ shown below, with trapezoid $PTRO$, $MR = 9$, $MP = 2$, and $PO = 4$.



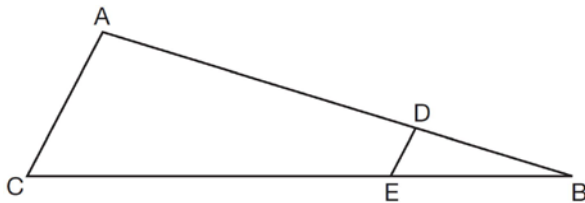
What is the length of \overline{TR} ?

- 1) 4.5
 - 2) 5
 - 3) 3
 - 4) 6
- 10 In the diagram below, triangle ACD has points B and E on sides \overline{AC} and \overline{AD} , respectively, such that $\overline{BE} \parallel \overline{CD}$, $AB = 1$, $BC = 3.5$, and $AD = 18$.



What is the length of \overline{AE} , to the nearest tenth?

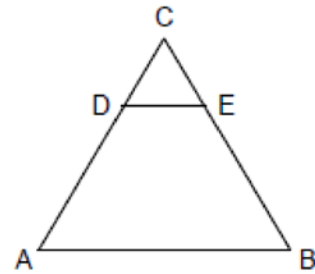
- 1) 14.0
 - 2) 5.1
 - 3) 3.3
 - 4) 4.0
- 11 In the diagram of $\triangle ABC$, points D and E are on \overline{AB} and \overline{CB} , respectively, such that $\overline{AC} \parallel \overline{DE}$.



If $AD = 24$, $DB = 12$, and $DE = 4$, what is the length of \overline{AC} ?

- 1) 8
- 2) 12
- 3) 16
- 4) 72

- 12 In the accompanying diagram of equilateral triangle ABC , $DE = 5$ and $\overline{DE} \parallel \overline{AB}$.

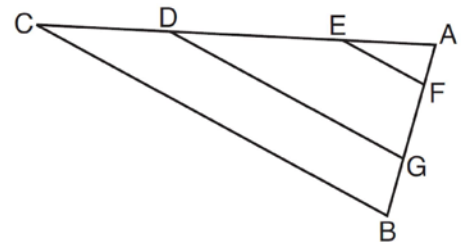


If AB is three times as long as DE , what is the perimeter of quadrilateral $ABED$?

- 1) 20
 - 2) 30
 - 3) 35
 - 4) 40
- 13 In $\triangle ABC$, point D is on \overline{AB} , and point E is on \overline{BC} such that $\overline{DE} \parallel \overline{AC}$. If $DB = 2$, $DA = 7$, and $DE = 3$, what is the length of \overline{AC} ?

- 1) 8
- 2) 9
- 3) 10.5
- 4) 13.5

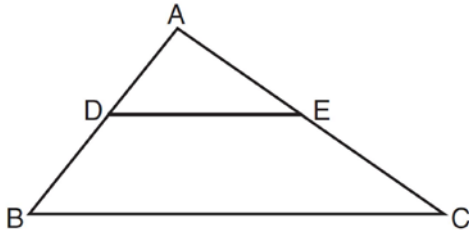
- 14 In the diagram below of $\triangle ABC$, with \overline{CDEA} and \overline{BGFA} , $\overline{EF} \parallel \overline{DG} \parallel \overline{CB}$.



Which statement is *false*?

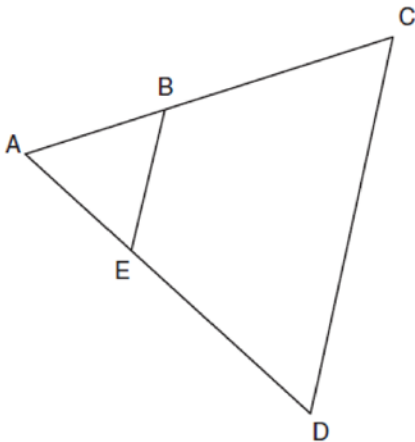
- 1) $\frac{AC}{AD} = \frac{AB}{AG}$
- 2) $\frac{AE}{AF} = \frac{AC}{AB}$
- 3) $\frac{AE}{AD} = \frac{EC}{AC}$
- 4) $\frac{BG}{BA} = \frac{CD}{CA}$

- 15 In the diagram below, $\triangle ABC \sim \triangle ADE$.

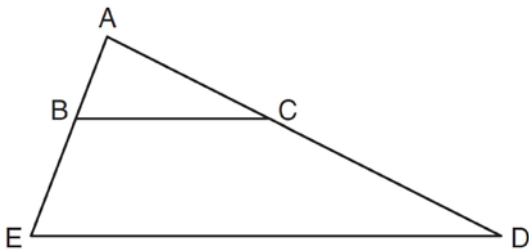


Which measurements are justified by this similarity?

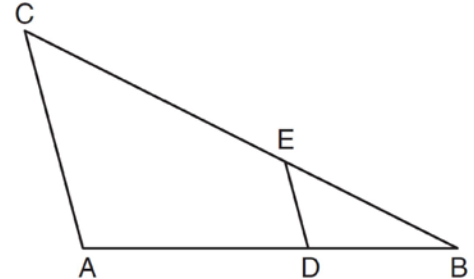
- 1) $AD = 3$, $AB = 6$, $AE = 4$, and $AC = 12$
 - 2) $AD = 5$, $AB = 8$, $AE = 7$, and $AC = 10$
 - 3) $AD = 3$, $AB = 9$, $AE = 5$, and $AC = 10$
 - 4) $AD = 2$, $AB = 6$, $AE = 5$, and $AC = 15$
- 16 In the diagram below of $\triangle ACD$, E is a point on \overline{AD} and B is a point on \overline{AC} , such that $\overline{EB} \parallel \overline{DC}$. If $\overline{AE} = 3$, $\overline{ED} = 6$, and $\overline{DC} = 15$, find the length of \overline{EB} .



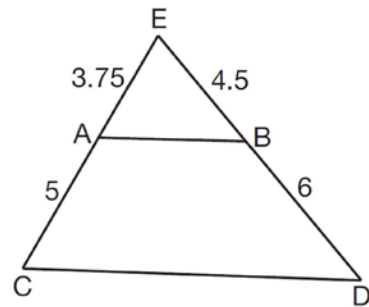
- 17 In the diagram below of $\triangle ADE$, B is a point on \overline{AE} and C is a point on \overline{AD} such that $\overline{BC} \parallel \overline{ED}$, $\overline{AC} = x - 3$, $\overline{BE} = 20$, $\overline{AB} = 16$, and $\overline{AD} = 2x + 2$. Find the length of \overline{AC} .



- 18 In the diagram below of $\triangle ABC$, D is a point on \overline{AB} , E is a point on \overline{BC} , $\overline{AC} \parallel \overline{DE}$, $\overline{CE} = 25$ inches, $\overline{AD} = 18$ inches, and $\overline{DB} = 12$ inches. Find, to the nearest tenth of an inch, the length of \overline{EB} .



- 19 In $\triangle CED$ as shown below, points A and B are located on sides \overline{CE} and \overline{ED} , respectively. Line segment \overline{AB} is drawn such that $\overline{AE} = 3.75$, $\overline{AC} = 5$, $\overline{EB} = 4.5$, and $\overline{BD} = 6$.



Explain why \overline{AB} is parallel to \overline{CD} .

G.SRT.B.5: Side Splitter Theorem 1a

Answer Section

1 ANS: 2

$$\frac{3}{7} = \frac{6}{x}$$

$$3x = 42$$

$$x = 14$$

REF: 081027ge

2 ANS: 3

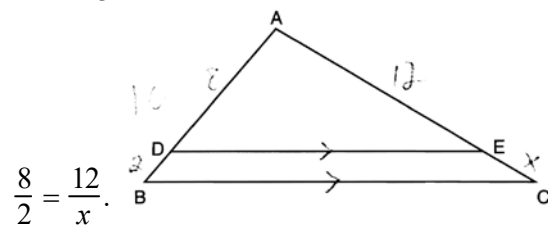
$$\frac{5}{7} = \frac{10}{x}$$

$$5x = 70$$

$$x = 14$$

REF: 081103ge

3 ANS: 3



$$8x = 24$$

$$x = 3$$

REF: 061216ge

4 ANS: 3

$$\frac{12}{8} = \frac{21}{x} \quad 21 + 14 = 35$$

$$12x = 168$$

$$x = 14$$

REF: 061426ge

5 ANS: 2

$$\frac{3}{6} = \frac{5}{x}$$

$$3x = 30$$

$$x = 10$$

REF: 081423ge

6 ANS: 3

$$\frac{4}{6} = \frac{x+2}{4x-7}$$

$$16x - 28 = 6x + 12$$

$$10x = 40$$

$$x = 4$$

REF: 011521ge

7 ANS: 4

$$\frac{x}{4} = \frac{x+x+3}{10}$$

$$10x = 8x + 12$$

$$2x = 12$$

$$x = 6$$

REF: 011626ge

8 ANS: 3

$$\frac{9}{5} = \frac{9.2}{x} \quad 5.1 + 9.2 = 14.3$$

$$9x = 46$$

$$x \approx 5.1$$

REF: 061511geo

9 ANS: 4

$$\frac{2}{4} = \frac{9-x}{x}$$

$$36 - 4x = 2x$$

$$x = 6$$

REF: 061705geo

10 ANS: 4

$$\frac{1}{3.5} = \frac{x}{18-x}$$

$$3.5x = 18 - x$$

$$4.5x = 18$$

$$x = 4$$

REF: 081707geo

11 ANS: 2

$$\frac{12}{4} = \frac{36}{x}$$

$$12x = 144$$

$$x = 12$$

REF: 061621geo

12 ANS: 4

Because $\overline{DE} \parallel \overline{AB}$, $\triangle CDE$ is an equilateral triangle as well. If $DE = 5$, then $CD = 5$ and $CE = 5$, and $AD = 10$ and $BE = 10$. Since AB is three times as long as DE , $AB = 15$. $5 + 10 + 10 + 15 = 40$

REF: 089915a

13 ANS: 4

$$\triangle ABC \sim \triangle DBE. \frac{\overline{AB}}{\overline{DB}} = \frac{\overline{AC}}{\overline{DE}}$$

$$\frac{9}{2} = \frac{x}{3}$$

$$x = 13.5$$

REF: 060927ge

14 ANS: 3

REF: 081507ge

15 ANS: 4

$$\frac{2}{6} = \frac{5}{15}$$

REF: 081517geo

16 ANS:

$$5. \frac{3}{x} = \frac{6+3}{15}$$

$$9x = 45$$

$$x = 5$$

REF: 011033ge

17 ANS:

$$32. \frac{16}{20} = \frac{x-3}{x+5} \quad \cdot \quad \overline{AC} = x - 3 = 35 - 3 = 32$$

$$16x + 80 = 20x - 60$$

$$140 = 4x$$

$$35 = x$$

REF: 011137ge

18 ANS:

$$16.7. \frac{x}{25} = \frac{12}{18}$$

$$18x = 300$$

$$x \approx 16.7$$

REF: 061133ge

19 ANS:

$$\frac{3.75}{5} = \frac{4.5}{6} \quad \overline{AB} \text{ is parallel to } \overline{CD} \text{ because } \overline{AB} \text{ divides the sides proportionately.}$$

$$39.375 = 39.375$$

REF: 061627geo