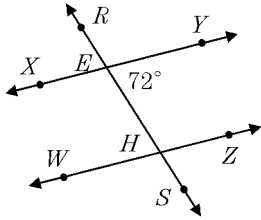


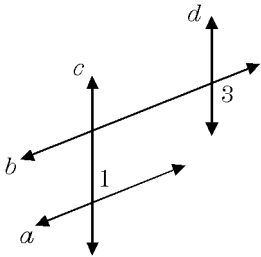
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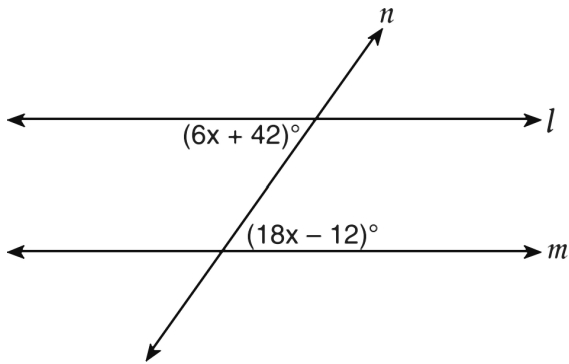
1. In the accompanying diagram, transversal  $\overleftrightarrow{RS}$  intersects parallel lines  $\overleftrightarrow{XY}$  and  $\overleftrightarrow{WZ}$  at  $E$  and  $H$ , respectively. If  $m\angle HEY = 72$ , what is  $m\angle ZHS$ ?



2. In the accompanying figure,  $a \parallel b$  and  $c \parallel d$ . If  $m\angle 1 = 68$ , find  $m\angle 3$ .



3. Line  $n$  intersects lines  $l$  and  $m$ , forming the angles shown in the diagram below.

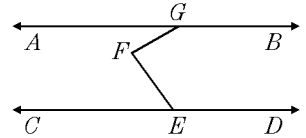


Which value of  $x$  would prove  $l \parallel m$ ?

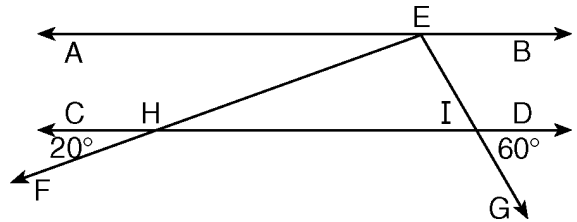
- A. 2.5    B. 4.5    C. 6.25    D. 8.75

4. In the accompanying diagram,  $\overleftrightarrow{AGB} \parallel \overleftrightarrow{CED}$ ,  $m\angle AGF = 30$ , and  $m\angle CEF = 45$ . What is  $m\angle GFE$ ?

- A. 45    B. 52  
C. 60    D. 75



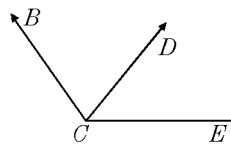
5. In the accompanying diagram,  $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$ . From point  $E$  on  $\overleftrightarrow{AB}$  transversals  $\overleftrightarrow{EF}$  and  $\overleftrightarrow{EG}$  are drawn, intersecting  $\overleftrightarrow{CD}$  at  $H$  and  $I$ , respectively.



If  $m\angle CHF = 20$  and  $m\angle DIG = 60$ , what is  $m\angle HEI$ ?

- A.  $60^\circ$     B.  $80^\circ$     C.  $100^\circ$     D.  $120^\circ$

6. In the accompanying diagram,  $m\angle ECB = 6x$ ,  $m\angle ECD = 3x - 11$ , and  $m\angle DCB = 74$ . What is the value of  $x$ ?

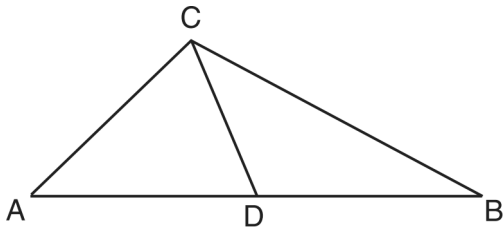


7. The measures of the three angles of a triangle are in the ratio 1:3:5. Find the measure of the *smallest* angle.

8.  $\triangle ABC$  is similar to  $\triangle DEF$ . The ratio of the length of  $\overline{AB}$  to the length of  $\overline{DE}$  is 3:1. Which ratio is also equal to 3:1?

- A.  $\frac{m\angle A}{m\angle D}$   
 B.  $\frac{m\angle B}{m\angle F}$   
 C.  $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF}$   
 D.  $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF}$

9. As shown in the diagram below,  $\overline{CD}$  is a median of  $\triangle ABC$ .



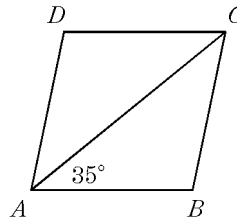
Which statement is always true?

- A.  $\overline{AD} \cong \overline{DB}$       B.  $\overline{AC} \cong \overline{AD}$   
 C.  $\angle ACD \cong \angle CDB$       D.  $\angle BCD \cong \angle ACD$
10. In which quadrilateral are the diagonals always congruent?
- A. rectangle      B. trapezoid  
 C. rhombus      D. parallelogram
11. If the diagonals of a parallelogram are perpendicular but *not* congruent, then the parallelogram is
- A. a rectangle  
 B. a rhombus  
 C. a square  
 D. an isosceles trapezoid

12. In quadrilateral  $ABCD$ ,  $m\angle A = 72$ ,  $m\angle B = 94$ , and  $m\angle C = 113$ . What is  $m\angle D$ ?

- A. 81      B. 86      C. 108      D. 136

13. In the accompanying diagram of rhombus  $ABCD$ , diagonal  $\overline{AC}$  is drawn. If  $m\angle CAB = 35$  find  $m\angle ADC$ .



14. In parallelogram  $ABCD$ , diagonals  $\overline{AC}$  and  $\overline{DB}$  intersect at  $E$ . Which statement is always true?

- A. Triangle  $AED$  is isosceles.  
 B. Triangle  $ABD$  is a right triangle.  
 C. Triangle  $AEB$  is congruent to triangle  $AED$ .  
 D. Triangle  $ABC$  is congruent to triangle  $CDA$ .

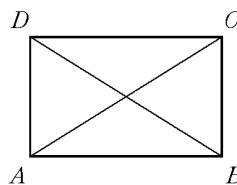
15. If the perimeter of a square is 8, which is the length of a diagonal?

- A.  $2\sqrt{2}$       B.  $2\sqrt{3}$       C.  $8\sqrt{2}$       D. 4

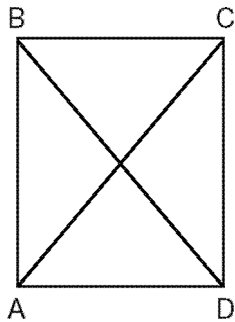
16. The perimeter of a rhombus is 60. If the length of its longer diagonal measures 24, the length of the *shorter* diagonal is

- A. 9      B. 15      C. 18      D. 20

17. In rectangle  $ABCD$ , diagonal  $AC = x + 10$  and diagonal  $BD = 2x - 30$ . Find the value of  $x$ .

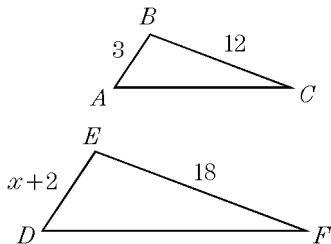


18. Two adjacent sides of a rhombus are represented by  $5x + 7$  and  $6x - 1$ . Find the value of  $x$ .
19. In the accompanying diagram of rectangle  $ABCD$ ,  $m\angle BAC = 3x + 4$  and  $m\angle ACD = x + 28$ .



What is  $m\angle CAD$ ?

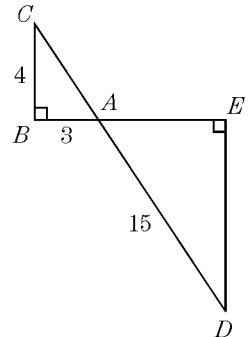
- A. 12    B. 37    C. 40    D. 50
20. The lengths of the sides of a triangle are 8, 15, and 17. If the longest side of a similar triangle is 51, what is the length of the *shortest* side?
- A. 32    B. 24    C. 16    D. 4
21. In the accompanying diagram,  $\triangle ABC$  is similar to  $\triangle DEF$ ,  $\angle A \cong \angle D$ , and  $\angle B \cong \angle E$ . If  $AB = 3$ ,  $BC = 12$ ,  $DE = x + 2$ , and  $EF = 18$ , find the value of  $x$ .



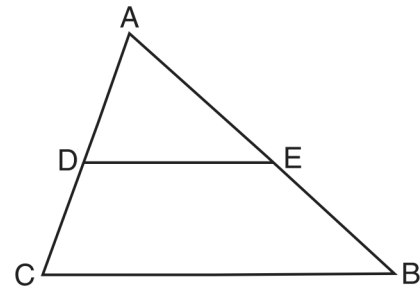
22. In the accompanying diagram,  $\overline{BAE}$ ,  $\overline{CAD}$ ,  $\angle B$  and  $\angle E$  are right angles,  $AB = 3$ ,  $BC = 4$ , and  $AD = 15$ .

What is the length of  $DE$ ?

- A. 5    B. 8  
C. 9    D. 12

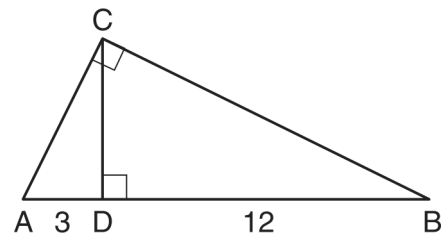


23. Triangle  $ABC$  is shown in the diagram below.



If  $\overline{DE}$  joins the midpoints of  $\overline{ADC}$  and  $\overline{AEB}$ , which statement is *not* true?

- A.  $DE = \frac{1}{2}CB$     B.  $\overline{DE} \parallel \overline{CB}$   
C.  $\frac{AD}{DC} = \frac{DE}{CB}$     D.  $\triangle ABC \sim \triangle AED$
24. In the diagram below of right triangle  $ABC$ , altitude  $\overline{CD}$  is drawn to hypotenuse  $\overline{AB}$ .

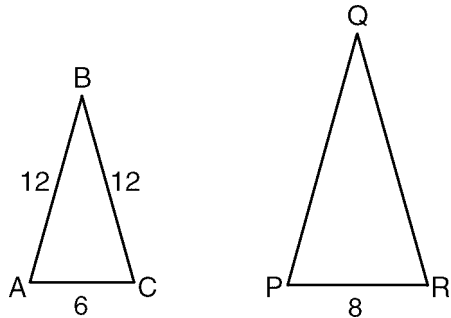


If  $AD = 3$  and  $DB = 12$ , what is the length of altitude  $\overline{CD}$ ?

- A. 6    B.  $6\sqrt{5}$     C. 3    D.  $3\sqrt{5}$

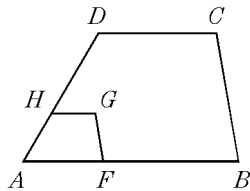
25. On level ground, a person 6 feet tall casts a shadow of 8 feet. At the same time, a nearby tree casts a shadow of 20 feet. Find the number of feet in the height of the tree.

26. In the accompanying diagram,  $\triangle ABC$  is similar to  $\triangle PQR$ ,  $AC = 6$ ,  $AB = BC = 12$ , and  $PR = 8$ . Find the perimeter of  $\triangle PQR$ .



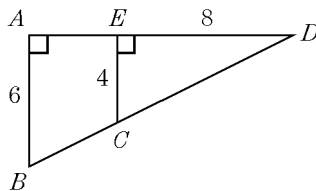
27. If  $\triangle RST \sim \triangle ABC$ ,  $m\angle A = x^2 - 8x$ ,  $m\angle C = 4x - 5$ , and  $m\angle R = 5x + 30$ , find  $m\angle C$ .

28. In the accompanying diagram, trapezoid  $ABCD$  is similar to trapezoid  $AFGH$ . If  $AF = 18$ ,  $AB = 54$ , and  $HG = 9$ , what is the length of  $\overline{DC}$ ?



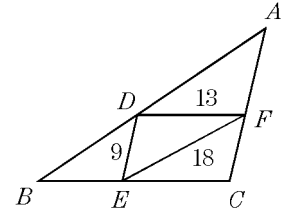
29. In  $\triangle ABC$ ,  $AB = 8$ ,  $BC = 10$ , and  $CA = 16$ . If  $D$  is the midpoint of  $\overline{AB}$  and  $E$  is the midpoint of  $\overline{BC}$ , find the length of  $\overline{DE}$ .

30. In the accompanying diagram of  $\triangle ABD$ ,  $\overline{AB} \perp \overline{AD}$  and  $\overline{EC} \perp \overline{AD}$ . If  $AB = 6$ ,  $EC = 4$ , and  $ED = 8$ , find  $AE$ .

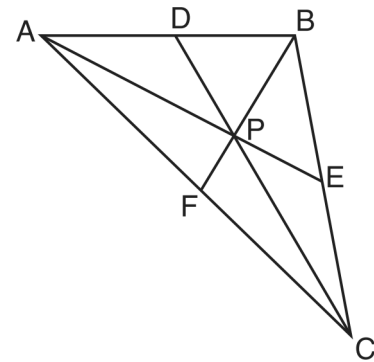


31. In the accompanying diagram of  $\triangle ABC$ ,  $\triangle DEF$  is formed by joining the midpoints of the sides of  $\triangle ABC$ . If  $DE = 9$ ,  $FE = 18$ , and  $DF = 13$ , what is the perimeter of  $\triangle ABC$ ?

- A. 10    B. 20  
C. 40    D. 80



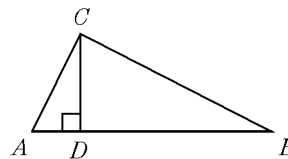
32. In  $\triangle ABC$  shown below,  $P$  is the centroid and  $BF = 18$ .



What is the length of  $\overline{BP}$ ?

- A. 6    B. 9    C. 3    D. 12

33. In the accompanying diagram,  $\triangle ABC$  is a right triangle and  $\overline{CD}$  is the altitude to hypotenuse  $\overline{AB}$ . If  $\overline{AD} = 4$  and  $\overline{DB} = 16$ , find the length of  $\overline{CD}$ .



34. The length of the line segment connecting  $(2, -2)$  and  $(-3, -1)$  is

- A.  $\sqrt{10}$     B. 2    C.  $\sqrt{26}$     D.  $\sqrt{34}$

35. In triangles  $ABC$  and  $DEF$ ,  $AB = 4$ ,  $AC = 5$ ,  $DE = 8$ ,  $DF = 10$ , and  $\angle A = \angle D$ . Which method could be used to prove  $\triangle ABC \sim \triangle DEF$ ?

- A. AA    B. SAS    C. SSS    D. ASA

36. Lines  $m$  and  $n$  intersect at point  $A$ . Line  $k$  is perpendicular to both lines  $m$  and  $n$  at point  $A$ . Which statement *must* be true?

- A. Lines  $m$ ,  $n$ , and  $k$  are in the same plane.  
B. Lines  $m$  and  $n$  are in two different planes.  
C. Lines  $m$  and  $n$  are perpendicular to each other.  
D. Line  $k$  is perpendicular to the plane containing lines  $m$  and  $n$ .

37. The measures of two complementary angles are represented by  $(3x + 15)$  and  $(2x - 10)$ . What is the value of  $x$ ?

- A. 17    B. 19    C. 35    D. 37

Geometry 04/26/2015

1.		21.	
Answer:	72	Answer:	2.5
2.		22.	
Answer:	112	Answer:	D
3.		23.	
Answer:	B	Answer:	C
4.		24.	
Answer:	D	Answer:	A
5.		25.	
Answer:	C	Answer:	15
6.		26.	
Answer:	21	Answer:	40
7.		27.	
Answer:	20	Answer:	55
8.		28.	
Answer:	D	Answer:	27
9.		29.	
Answer:	A	Answer:	8
10.		30.	
Answer:	A	Answer:	4
11.		31.	
Answer:	B	Answer:	D
12.		32.	
Answer:	A	Answer:	D
13.		33.	
Answer:	110	Answer:	8
14.		34.	
Answer:	D	Answer:	C
15.		35.	
Answer:	A	Answer:	B
16.		36.	
Answer:	C	Answer:	D
17.		37.	
Answer:	40	Answer:	A
18.			
Answer:	8		
19.			
Answer:	D		
20.			
Answer:	B		