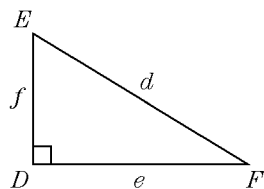
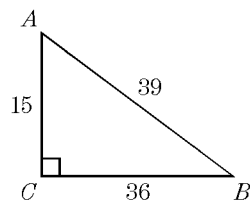


1. Given triangle DEF , state the following ratios in terms of side lengths d , e , and f .



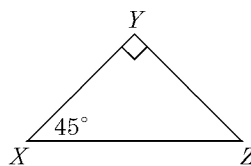
- a) $\cos F$
- b) $\tan F$
- c) $\sin E$

2. Given $\triangle ABC$ shown, express the *sine*, *cosine*, and *tangent* of $\angle B$ as reduced fractions.



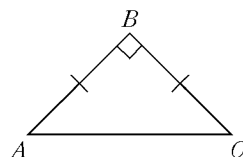
3. An altitude of an equilateral triangle is 18 units. What is the perimeter of the equilateral triangle?

4. What is the altitude of an equilateral triangle with a perimeter of 30 units?



5. In the diagram, $XY = 8\sqrt{3}$. Find the length of \overline{XZ} .

6. In the diagram, $AC = 20$. Find BC .



7. In $\triangle ABC$, $m\angle A = 40$ and $m\angle B = 67$. Name the longest side of this triangle.

8. The teacher sketches $\triangle JOY$ on the board with the following specifications:

$$m\angle J = 2x + 11$$

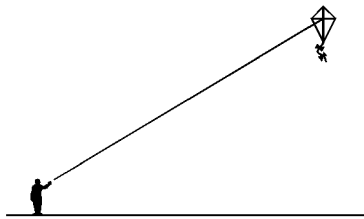
$$m\angle O = 4x + 9$$

$$m\angle Y = x + 27$$

She then asks her students which side of the triangle is the shortest. Enrique answers \overline{JO} , Jorge answers \overline{OY} , and Stella answers \overline{JY} . Which student is correct?

- a) Jorge b) Stella c) Enrique
d) none, $\triangle JOY$ is equilateral

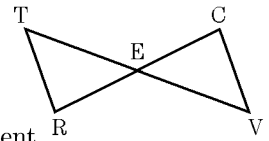
9. While flying my kite yesterday, I managed to get the kite 300 feet above the ground. At this height, the string made a 35° angle with the ground. About how much string had I let out?



10. When I went kite flying the other day, I managed to let out an entire roll of string (400 feet). If the string, when pulled tight, formed a 40° angle with the ground, about how high was the kite?

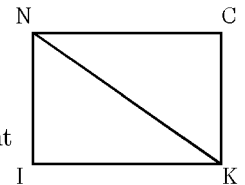
11. In the figure shown, $m\angle T = m\angle V$ and E is the midpoint of \overline{TV} . What congruence statement would prove $\triangle TER \cong \triangle VEC$?

- a) SSS b) SAS
c) ASA d) SSA
e) not necessarily congruent



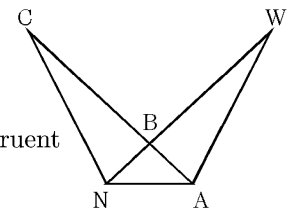
12. In the figure shown, $IN = CK$ and $\overline{IK} \parallel \overline{NC}$. What congruence statement would prove $\triangle KNI \cong \triangle NKC$?

- a) SSS b) SAS
c) ASA d) SSA
e) not necessarily congruent



13. In the figure shown, $m\angle C = m\angle W$ and $CB = WB$. What congruence statement would prove $\triangle CBN \cong \triangle WBA$?

- a) SSS b) SAS
c) ASA d) AAA
e) not necessarily congruent

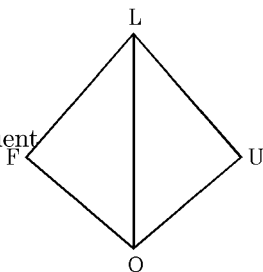


14. In the figure shown, $m\angle F = m\angle U$ and $FL = UL$. What congruence statement would prove $\triangle LOF \cong \triangle LOU$?

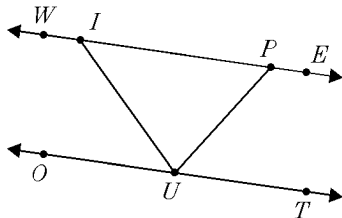
a) SSS b) SAS

c) ASA d) AAA

e) not necessarily congruent



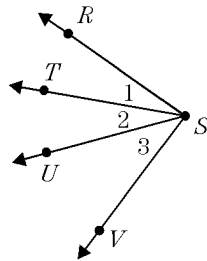
15. In the diagram, $\overleftrightarrow{WE} \parallel \overleftrightarrow{OT}$, $m\angle IUO = 50$, and $m\angle UPE = 120$. What is the measure of $\angle IUP$?



16. In the diagram, $m\angle WIU = 122$. What does the measure of $\angle IUO$ need to be to make $\overleftrightarrow{WE} \parallel \overleftrightarrow{OT}$?

17. Given \overrightarrow{BD} bisects $\angle ABC$, $m\angle ABD = 2x - 15$, and $m\angle CBD = x + 35$, what is the measure of $\angle ABC$?

18. In the diagram, \overrightarrow{SU} is the angle bisector of $\angle TSV$. $m\angle 1 = 3x + 7$ and $m\angle 3 = x + 3$. What is the value of x if the measure of $\angle RSV$ is 82?

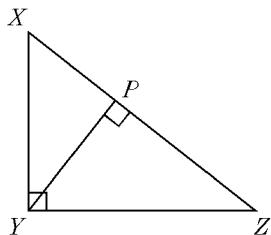


The following sets of numbers indicate the lengths of the sides of a triangle. Determine whether the triangle is *acute*, *obtuse*, *right*, or *impossible*.

19. $\{19, 12, 14\}$

20. If the sum of squares of two shorter side lengths of a triangle are less than the square of the longest side length then the triangle is ____ (acute/obtuse/right).

21. In the diagram, $XP = 9$ and $PZ = 15$. What is the length of \overline{YP} ?



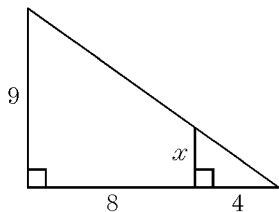
22. In right triangle ABC , altitude \overline{CD} is drawn to hypotenuse \overline{AB} . If $AD = 5$ and $DB = 24$, what is the length of \overline{CD} ?

23. In triangle ABC , $a = 230$, $b = 216$ and $c = 194$. Find angle A to the nearest degree.

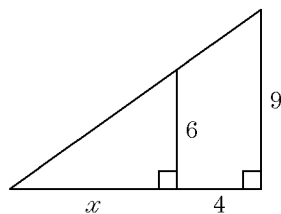
- a) $A = 68^\circ$ b) $A = 70^\circ$
c) $A = 72^\circ$ d) $A = 74^\circ$

24. In triangle ABC , $a = 22.4$, $b = 24.8$ and $c = 18.6$. Find $\angle B$ to the nearest degree.

25. Find the value of x .



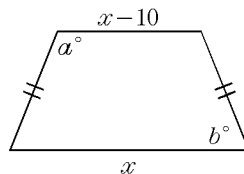
26. Find the value of x .



27. A triangle with side lengths 6, 13, and 15 is similar to another triangle with longest side of length 36. What is the perimeter of the larger triangle?

28. The sides of a right triangle are 6, 8, and 10. Find the area of a similar triangle whose largest side is 40.

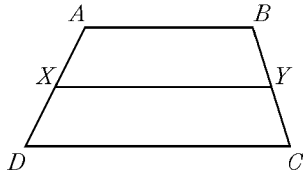
29. The isosceles trapezoid shown has a perimeter of 110 inches, $a = 109$, and the length of each leg of this trapezoid is 15 inches. Find the value of b and find the length of the shorter base.



30. The isosceles trapezoid shown has a perimeter of 92 cm, $b = 63$, and the length of each leg of this trapezoid is 11 cm. Find the value of a and find the length of the longer base.

31. The perimeter of trapezoid $WXYZ$ is 200 cm. The lengths of legs \overline{WX} and \overline{YZ} are 44 cm and 48 cm, respectively. What is the length of the median of this trapezoid?

32. In the diagram, trapezoid $ABCD$ has median \overline{XY} drawn. If $AB = 2x - 3$, $CD = 4x - 1$, and $XY = 2x + 5$, what is the value of x ?

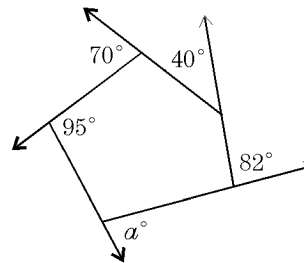


33. What convex polygon has an interior angle sum of 720° ?

34. Find the number of sides of a regular polygon with an interior angle measuring 144 degrees.

35. A regular polygon has an exterior angle of 36° . How many sides does this polygon have?

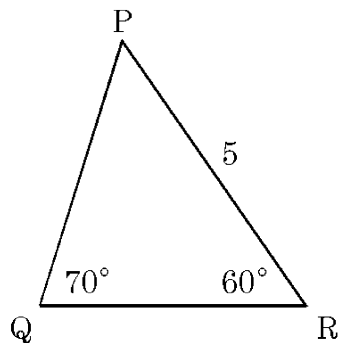
36. Solve for a .



37. A triangle has two sides of length 5 and 14. The third side of this triangle must be shorter than _____, and longer than _____.

38. Jamie knows the lengths of 2 sides of a triangle are 8 and 12. Use the Triangle Inequality Theorem to determine the possible values for the length of the third side of Jamie's triangle.

39. In the triangle below, what is the measure of \overline{PQ} ?

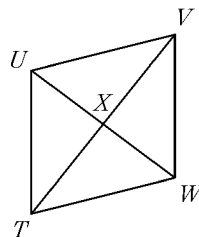


- a) $\frac{5}{\sin 70^\circ}$ b) $\frac{5 \sin 70^\circ}{\sin 60^\circ}$
 c) $\frac{5}{\sin 70^\circ}$ d) $\frac{5 \sin 60^\circ}{\sin 70^\circ}$
 e) $\frac{5}{\sin 60^\circ \sin 70^\circ}$

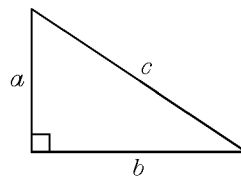
40. In the triangle, what is the measure of \overline{QR} ?

- a) $\frac{5}{\sin 50^\circ}$ b) $\frac{5 \sin 50^\circ}{\sin 70^\circ}$
 c) $\frac{5}{\sin 70^\circ}$ d) $\frac{5 \sin 60^\circ}{\sin 70^\circ}$
 e) $\frac{5}{\sin 50^\circ \sin 70^\circ}$

41. In the diagram, $\square TUVW$ is a rhombus. If $m\angle VUX = 50$, what is the measure of $\angle XVW$?

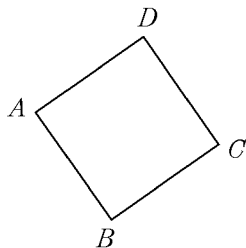


42. Find the value of a in the diagram given $b = \sqrt{14}$ and $c = 3\sqrt{2}$.

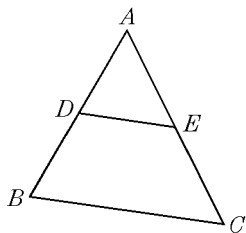


43. Find the value of a in the diagram given $b = \sqrt{15}$ and $c = 2\sqrt{6}$.

44. Given $ABCD$ is a rhombus, if $m\angle A = 75$, find $m\angle C$.



45. In the diagram, $m\angle B = m\angle ADE$.
 $\triangle ABC \sim$ ____ by ____.

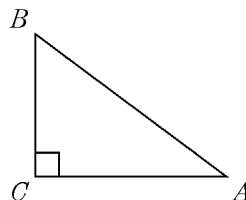


46. In the diagram, $m\angle C = 51$, $m\angle ADE = 76$, and $m\angle A = 53$. Find two similar triangles and *explain* why they are similar.

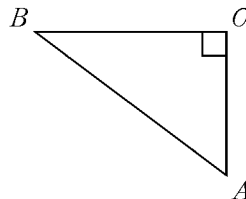
47. The midpoint of \overline{KL} is the point $M(3, 5)$. If the coordinates of K are $(-3, -4)$, what are the coordinates of L ?

48. The midpoint of \overline{RS} is the point $M(4, 7)$. If the coordinates of R are $(-2, -5)$, what are the coordinates of S ?

49. Solve the right triangle if $a = 11$ millimeters and $b = 21$ millimeters. Give lengths to 3 significant figures and angles to the nearest tenth of a degree.



50. Solve the right triangle if $b = 6$ kilometers and $c = 13$ kilometers. Give lengths to 3 significant figures and angles to the nearest tenth of a degree.



Geometry Spring Benchmark Review 2019 2/18/2017

- | | |
|--|---|
| 1.
Answer: $\frac{e}{d}; \frac{f}{e}; \frac{e}{d}$
CodePath: EAS.GEO.H.J.8 | 15.
Answer: 70°
CodePath: EAS.GEO.C.F.26 |
| 2.
Answer: $\sin B = \frac{5}{13}; \cos B = \frac{12}{13}; \tan B = \frac{5}{12}$
CodePath: EAS.GEO.H.J.10 | 16.
Answer: 58°
CodePath: EAS.GEO.C.F.33 |
| 3.
Answer: $36\sqrt{3}$ units
CodePath: EAS.GEO.H.H.74 | 17.
Answer: 170°
CodePath: EAS.GEO.B.J.31 |
| 4.
Answer: $5\sqrt{3}$ units
CodePath: EAS.GEO.H.H.75 | 18.
Answer: 13.8 or $\frac{69}{5}$
CodePath: EAS.GEO.B.J.20 |
| 5.
Answer: $8\sqrt{6}$ units
CodePath: EAS.GEO.H.G.9 | 19.
Answer: obtuse
CodePath: EAS.GEO.H.D.5 |
| 6.
Answer: $10\sqrt{2}$
CodePath: EAS.GEO.H.G.22 | 20.
Answer: obtuse
CodePath: EAS.GEO.H.E.2 |
| 7.
Answer: \overline{AB}
CodePath: EAS.GEO.E.E.22 | 21.
Answer: $3\sqrt{15}$ units
CodePath: EAS.GEO.H.B.7 |
| 8.
Answer: b
CodePath: EAS.CA2.G.6.34 | 22.
Answer: $2\sqrt{30}$
CodePath: EAS.NY1.2.E.B.149 |
| 9.
Answer: ≈ 523.0
CodePath: EAS.GEO.H.J.48 | 23.
Answer: a
CodePath: EAS.CA2.T.13.18 |
| 10.
Answer: ≈ 257.1 ft
CodePath: EAS.GEO.H.J.47 | 24.
Answer: 74°
CodePath: EAS.CA2.T.13.17 |
| 11.
Answer: c
CodePath: EAS.CA2.G.5.18 | 25.
Answer: 3
CodePath: EAS.GEO.G.I.10 |
| 12.
Answer: b
CodePath: EAS.CA2.G.5.17 | 26.
Answer: 8
CodePath: EAS.GEO.G.I.11 |
| 13.
Answer: c
CodePath: EAS.CA2.G.5.16 | 27.
Answer: 81.6 units
CodePath: EAS.GEO.G.I.42 |
| 14.
Answer: e
CodePath: EAS.CA2.G.5.14 | |

28.
 Answer: 384 in^2
 CodePath: EAS.CA2.G.4.80

29.
 Answer: 71; 35 in.
 CodePath: EAS.GEO.D.D.5

30.
 Answer: 117; 40 cm
 CodePath: EAS.GEO.D.D.6

31.
 Answer: 54 cm
 CodePath: EAS.GEO.D.D.7

32.
 Answer: 7
 CodePath: EAS.GEO.D.D.24

33.
 Answer: hexagon
 CodePath: EAS.GEO.D.H.22

34.
 Answer: decagon
 CodePath: EAS.GEO.D.H.25

35.
 Answer: 10
 CodePath: EAS.GEO.D.I.6

36.
 Answer: 83
 CodePath: EAS.GEO.D.I.24

37.
 Answer: 19; 9
 CodePath: EAS.GEO.E.E.3

38.
 Answer: $4 < s < 20$
 CodePath: EAS.CA2.G.6.8

39.
 Answer: d
 CodePath: EAS.CA2.T.13.27

40.
 Answer: b
 CodePath: EAS.CA2.T.13.28

41.
 Answer: 40°
 CodePath: EAS.GEO.D.F.27

42.
 Answer: 2
 CodePath: EAS.GEO.H.C.21

43.
 Answer: 3
 CodePath: EAS.GEO.H.C.22

44.
 Answer: 75
 CodePath: EAS.MMA.M.C.8

45.
 Answer: $\triangle ADE$; AA \sim
 CodePath: EAS.GEO.G.D.5

46.
 Answer: $\triangle ADE \sim \triangle ABC$; AA \sim
 CodePath: EAS.GEO.G.D.28

47.
 Answer: (6, 14)
 CodePath: EAS.GEO.L.D.32

48.
 Answer: (10, 19)
 CodePath: EAS.GEO.L.D.31

49.
 Answer: $\angle A \approx 27.6^\circ$, $\angle B \approx 62.4^\circ$,
 $c = \sqrt{562} \approx 23.7 \text{ mm}$
 CodePath: EAS.TRIM.J.14

50.
 Answer: $\angle A \approx 62.5^\circ$, $\angle B \approx 27.5^\circ$,
 $a = \sqrt{133} \approx 11.5 \text{ km}$
 CodePath: EAS.TRIM.J.15