Lines, Angles & Triangles

CollegeBoard Question Bank

Abstract

This exercise sheet contains

- an **Easy** category with 12 questions;
- a **Medium** category with 14 questions;
- a **Hard** category with 9 questions

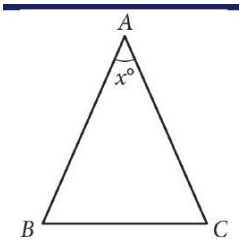
for you to attempt. A digital copy of this sheet is available for you on moodle. Feel free to utilize the **Question Space** on Teams to ask for guidance.

Best,
Omar :)

Lines, Angles & Triangles

Easy

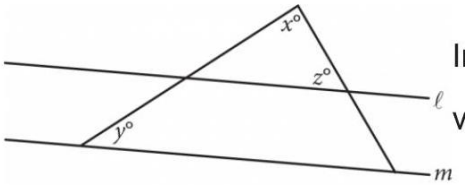
(1) **c8d60e48** MULTIPLE CHOICE One answer only



In the given triangle, $AB = AC$ and $\angle ABC$ has a measure of 67°. What is the value of x ?

a. 58
b. 46
c. 70
d. 36

(2) **a6dbad6b** MULTIPLE CHOICE One answer only



In the figure above, lines ℓ and m are parallel, $y = 20$, and $z = 60$. What is the value of x ?

Note: Figure not drawn to scale.

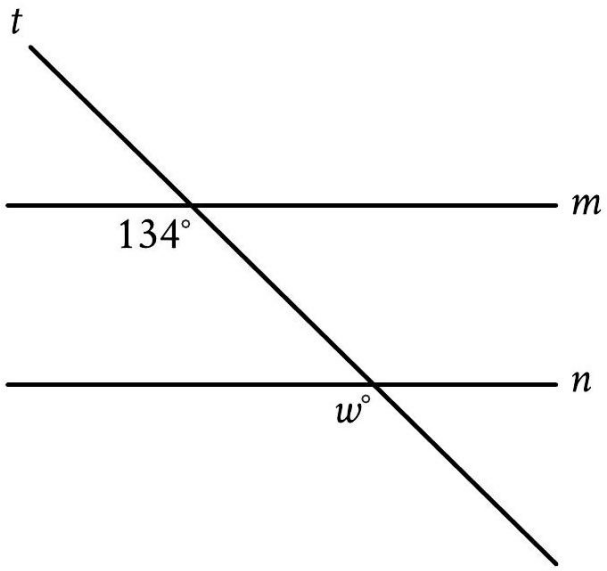
a. 90
b. 120
c. 80
d. 100

(3) **cbe8ca31** MULTIPLE CHOICE One answer only

In $\triangle XYZ$, the measure of $\angle X$ is $24°$ and the measure of $\angle Y$ is $98°$. What is the measure of $\angle Z$?

a. $122°$
b. $58°$
c. $74°$
d. $212°$

(4) **c24e1bda** MULTIPLE CHOICE One answer only



Note: Figure not drawn to scale. In the figure, line m is parallel to line n. What is the value of w ?

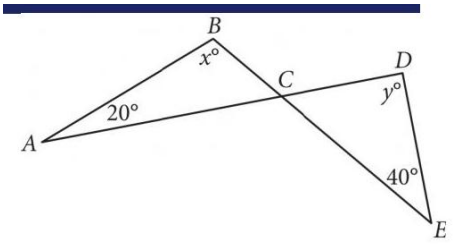
a. 66
b. 134
c. 13
d. 34

(5) **3563d76d** MULTIPLE CHOICE One answer only

At a certain time and day, the Washington Monument in Washington, DC, casts a shadow that is 300 feet long. At the same time, a nearby cherry tree casts a shadow that is 16 feet long. Given that the Washington Monument is approximately 555 feet tall, which of the following is closest to the height, in feet, of the cherry tree?

a. 30
b. 10
c. 20
d. 35

(6) **dfc420b2** MULTIPLE CHOICE One answer only



Note: Figure not drawn to scale. In the figure above, $\overline{AD}$ intersects $\overline{BE}$ at C. If $x = 100$, what is the value of y ?

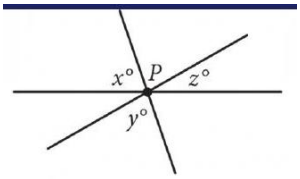
a. 60
b. 80
c. 100
d. 90

(7) **410bdbe6** MULTIPLE CHOICE One answer only

In the triangle above, $a = 45$. What is the value of b ?

a. 104
b. 76
c. 59
d. 52

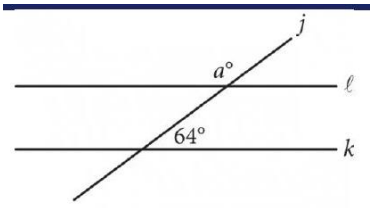
(8) **087cdcfd** MULTIPLE CHOICE One answer only



Note: Figure not drawn to scale. In the figure, three lines intersect at point P. If $x = 65$ and $y = 75$, what is the value of z ?

a. 80
b. 40
c. 140
d. 20

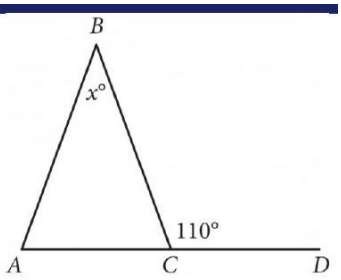
(9) **992f4e93** MULTIPLE CHOICE One answer only



Note: Figure not drawn to scale. In the figure above, lines ℓ and k are parallel. What is the value of a ?

a. 154
b. 116
c. 26
d. 64

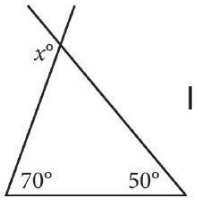
(10) **5733ce30** MULTIPLE CHOICE One answer only



In the given figure, $\overline{AC}$ extends to point D. If the measure of $\angle BAC$ is equal to the measure of $\angle BCA$, what is the value of x ?

a. 110
b. 40
c. 55
d. 70

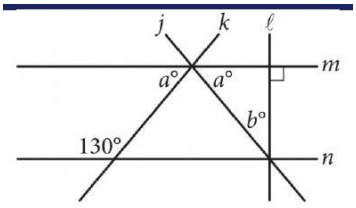
(11) **36200a38** MULTIPLE CHOICE One answer only



In the figure above, two sides of a triangle are extended. What is the value of x ?

a. 110
b. 130
c. 120
d. 140

(12) **3828f53d** MULTIPLE CHOICE One answer only

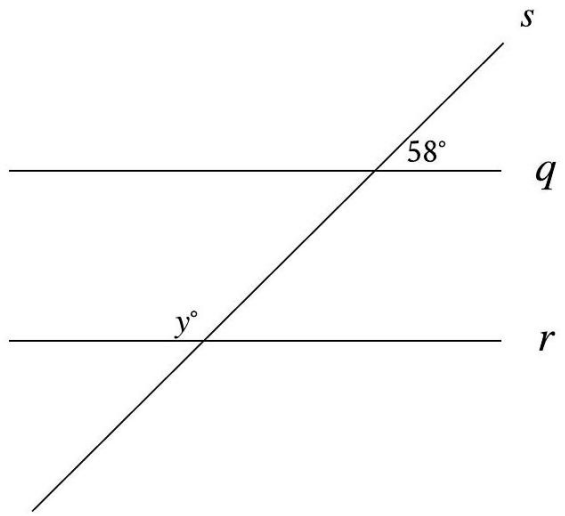


Note: Figure not drawn to scale. In the figure above, lines m and n are parallel. What is the value of b ?

a. 50
b. 40
c. 65
d. 80

Medium

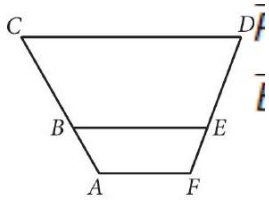
(1) **686b5212** SHORT ANSWER Case-Insensitive



Note: Figure not drawn to scale. In the figure, line q is parallel to line r, and both lines are intersected by line s. If $y = 2x + 8$, what is the value of x ?

(2) **81b664bc** MULTIPLE CHOICE One answer only

In the figure above, $\overline{AF}, \overline{BE}$, and $\overline{CD}$ are parallel. Points B and E lie



on $\overline{AC}$ and $\overline{FD}$, respectively. If $AB = 9, BC = 18.5$, and $FE = 8.5$, what is the length of $\overline{ED}$, to the nearest tenth?

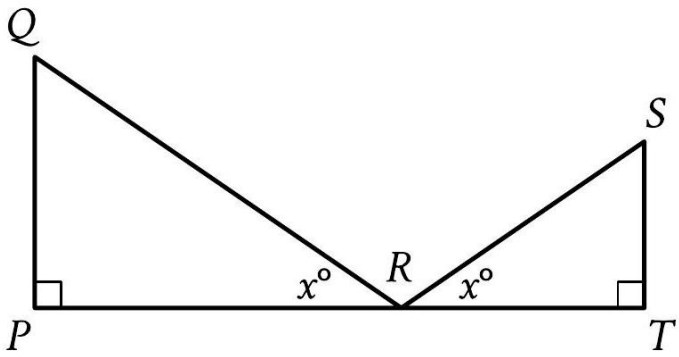
a. 19.6
b. 16.8
c. 17.5
d. 18.4

(3) **94364a79** MULTIPLE CHOICE One answer only

Two nearby trees are perpendicular to the ground, which is flat. One of these trees is 10 feet tall and has a shadow that is 5 feet long. At the same time, the shadow of the other tree is 2 feet long. How tall, in feet, is the other tree?

a. 4
b. 8
c. 27
d. 3

(4) **51f26ce8** MULTIPLE CHOICE One answer only

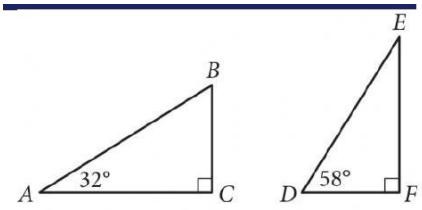


Note: Figure not drawn to scale.

$\triangle QPR$ is similar to $\triangle STR$. The lengths represented by $\overline{ST}, \overline{QP}, \overline{PR}$, and $\overline{QR}$ in the figure are $14, 15, 20$, and 25 , respectively. What is the length of $\overline{SR}$?

a. $\frac{350}{15}$
b. $\frac{210}{25}$
c. $\frac{350}{20}$
d. $\frac{210}{20}$

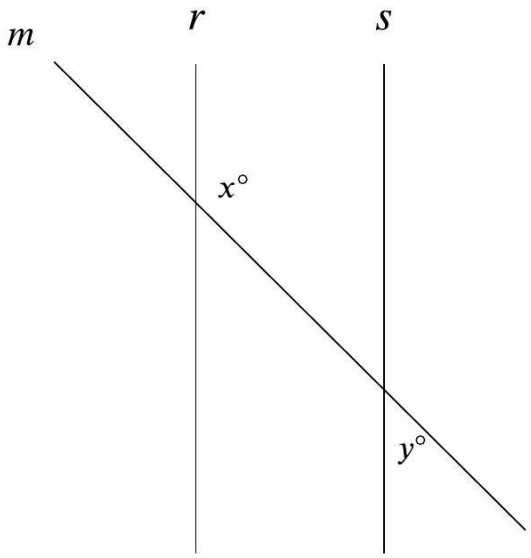
(5) **933fee1a** MULTIPLE CHOICE One answer only



Triangles ABC and DEF are shown above. Which of the following is equal to the ratio $\frac{BC}{AB}$?

a. $\frac{DF}{DE}$
b. $\frac{DE}{DF}$
c. $\frac{EF}{DE}$
d. $\frac{DF}{EF}$

(6) **a4c05a1b** MULTIPLE CHOICE One answer only



Note: Figure not drawn to scale.

In the figure shown, lines r and s are parallel, and line m intersects both lines. If $y < 65$, which of the following must be true?

a. $x + y > 180$
b. $x > 115$
c. $x + y < 180$
d. $x < 115$

(7) **d3fe472f** MULTIPLE CHOICE One answer only

Triangle ABC is similar to triangle XYZ, such that A, B, and C correspond to X, Y, and Z respectively. The length of each side of triangle XYZ is 2 times the length of its corresponding side in triangle ABC. The measure of side AB is 16. What is the measure of side XY ?

a. 32
b. 14
c. 18
d. 16

(8) **fd8745fc** SHORT ANSWER Case-Insensitive

In triangle JKL, the measures of $\angle K$ and $\angle L$ are each $48°$. What is the measure of $\angle J$, in degrees? (Disregard the degree symbol when entering your answer.)

(9) **c7bed21d** MULTIPLE CHOICE One answer only

Quadrilateral $P'Q'R'S'$ is similar to quadrilateral $PQRS$, where P, Q, R, and S correspond to P', Q', R', and S', respectively. The measure of angle P is $30°$, the measure of angle Q is $50°$, and the measure of angle R is $70°$. The length of each side of $P'Q'R'S'$ is 3 times the length of each corresponding side of $PQRS$. What is the measure of angle P' ?

a. $30°$
b. $40°$
c. $10°$
d. $90°$

(10) **901e3285** MULTIPLE CHOICE One answer only

In triangle ABC, the measure of angle A is $50°$. If triangle ABC is isosceles, which of the following is NOT a possible measure of angle B ?

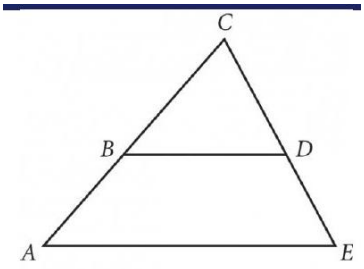
a. $65°$
b. $80°$
c. $100°$
d. $50°$

(11) **4ff7b652** MULTIPLE CHOICE One answer only

Right triangles LMN and PQR are similar, where L and M correspond to P and Q, respectively. Angle M has a measure of $53°$. What is the measure of angle Q ?

a. $37°$
b. $127°$
c. $53°$
d. $143°$

(12) **6dd463ca** MULTIPLE CHOICE One answer only

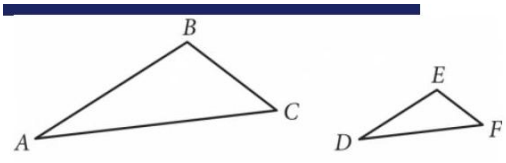


Note: Figure not drawn to scale.

In the figure above, segments AE and BD are parallel. If angle BDC measures 58° and angle ACE measures 62°, what is the measure of angle CAE ?

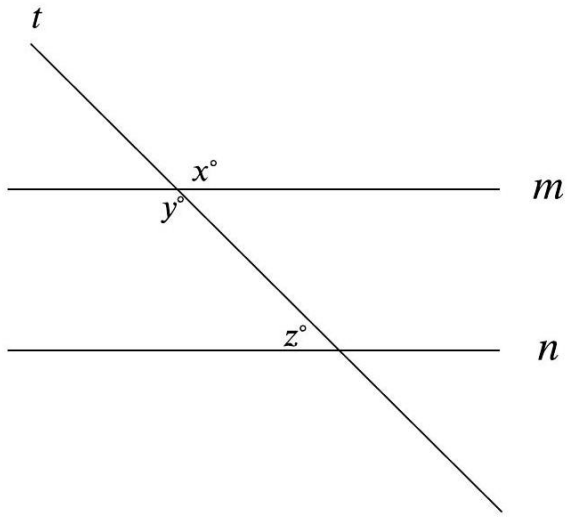
a. 62°
b. 60°
c. 58°
d. 120°

(13) **1c3d613c** SHORT ANSWER Case-Insensitive



Note: Figures not drawn to scale. Triangle ABC and triangle DEF are shown. The relationship between the side lengths of the two triangles is such that $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF} = 3$. If the measure of angle BAC is $20°$, what is the measure, in degrees, of angle EDF? (Disregard the degree symbol when gridding your answer.)

(14) **2adbf1b1** MULTIPLE CHOICE One answer only

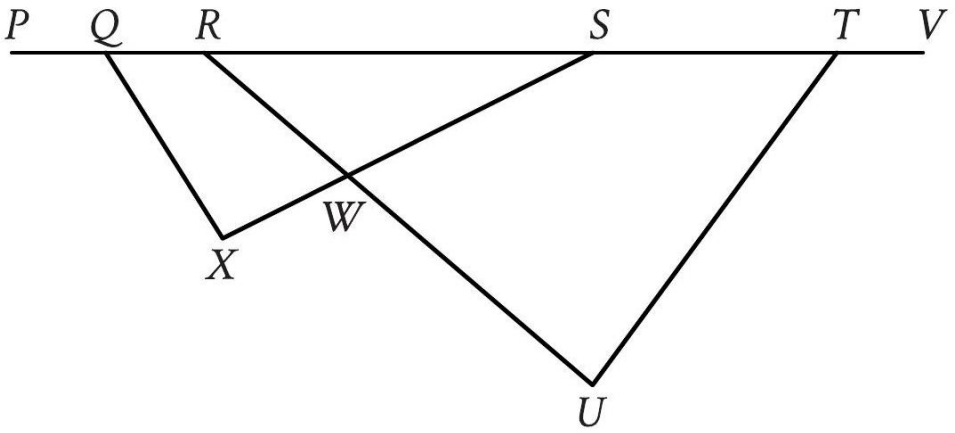


Note: Figure not drawn to scale. In the figure, lines m and n are parallel. If $x = 6k + 13$ and $y = 8k - 29$, what is the value of z ?

a. 139
b. 41
c. 21
d. 3

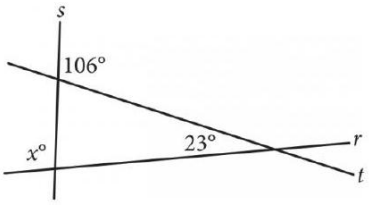
Hard

(1) **e10d8313** SHORT ANSWER Case-Insensitive



Note: Figure not drawn to scale. In the figure shown, points Q, R, S, and T lie on line segment PV, and line segment RU intersects line segment SX at point W. The measure of $\angle SQX$ is 48°, the measure of $\angle SXQ$ is 86°, the measure of $\angle SWU$ is 85°, and the measure of $\angle VTU$ is 162°. What is the measure, in degrees, of $\angle TUR$?

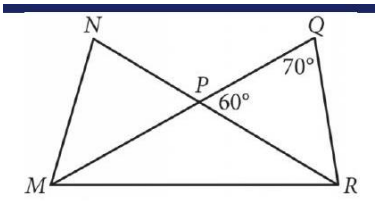
(2) **f88f27e5** SHORT ANSWER Case-Insensitive



Intersecting lines r, s, and t are shown below.

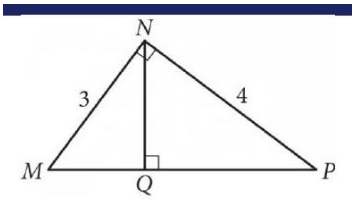
What is the value of x ?

(3) **947a3cde** SHORT ANSWER Case-Insensitive



In the figure above, $\overline{MQ}$ and $\overline{NR}$ intersect at point $P, NP = QP$, and $MP = PR$. What is the measure, in degrees, of $\angle QMR$? (Disregard the degree symbol when gridding your answer.)

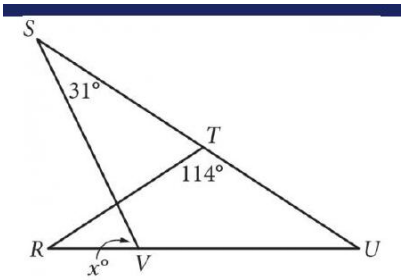
(4) **740bf79f** MULTIPLE CHOICE One answer only



In the figure above, what is the length of $\overline{NQ}$?

a. 2.2
b. 2.3
c. 2.4
d. 2.5

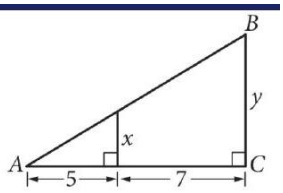
(5) **bd7f6e30** MULTIPLE CHOICE One answer only



In the figure above, $RT = TU$. What is the value of x ?

a. 66
b. 64
c. 58
d. 72

(6) **eeb4143c** SHORT ANSWER Case-Insensitive

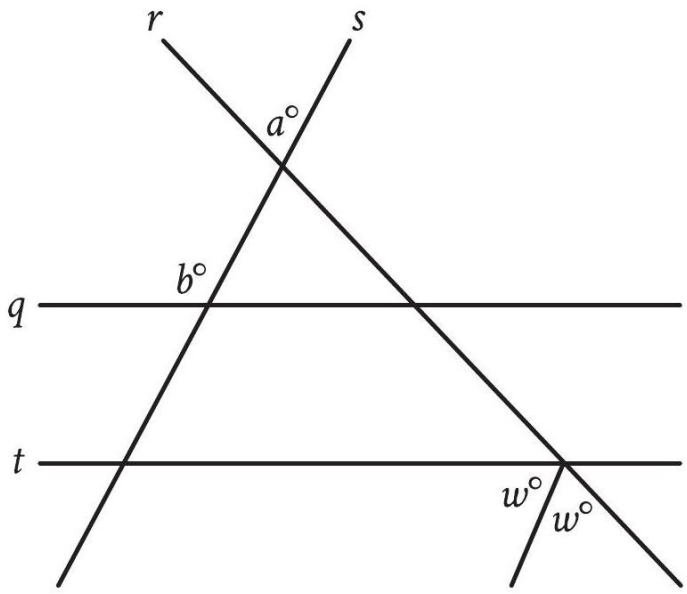


Note: Figure not drawn to scale. The area of triangle ABC above is at least 48 but no more than 60 . If y is an integer, what is one possible value of x ?

(7) **5b4757df** SHORT ANSWER Case-Insensitive

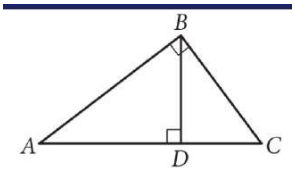
In triangle RST, angle T is a right angle, point L lies on $\overline{RS}$, point K lies on $\overline{ST}$, and $\overline{LK}$ is parallel to $\overline{RT}$. If the length of $\overline{RT}$ is 72 units, the length of $\overline{LK}$ is 24 units, and the area of triangle RST is 792 square units, what is the length of $\overline{KT}$, in units?

(8) **17912810** SHORT ANSWER Case-Insensitive



Note: Figure not drawn to scale. In the figure, parallel lines q and t are intersected by lines r and s. If $a = 43$ and $b = 122$, what is the value of w ?

(9) **6a3fbec3** SHORT ANSWER Case-Insensitive



Note: Figure not drawn to scale. In the figure above, $BD = 6$ and $AD = 8$. What is the length of $\overline{DC}$?

Total of marks: 35