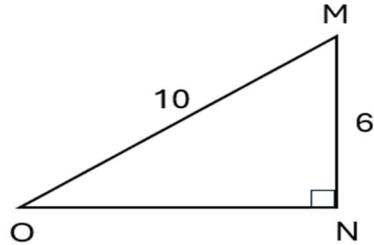


Triangles. Form A

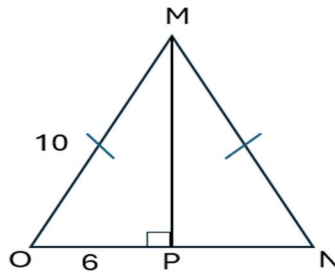
1. Given right triangle $\triangle MNO$ below, how many units long is \overline{NO} ?

- (A) $2\sqrt{2}$
- (B) 4
- (C) 6
- (D) $\sqrt{60}$
- (E) 8



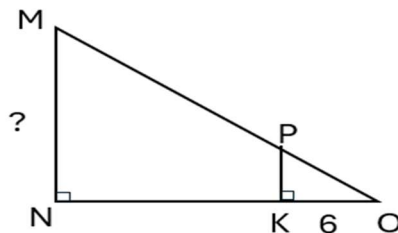
2. For triangle $\triangle MNO$ below, \overline{MN} is congruent to \overline{MO} . If $\overline{MO} = 10$ units, and $\overline{PO} = 6$ units. What is the area of the triangle $\triangle MNO$ in square units?

- (A) 24
- (B) 48
- (C) 60
- (D) 30
- (E) 120



3. In the right triangle $\triangle MON$ below, \overline{PK} is parallel to \overline{MN} , and \overline{PK} is perpendicular to \overline{NO} at K. The length of \overline{NO} is 20 feet, the length of \overline{PK} is 3 feet, and the length of \overline{OK} is 4 feet. What is the length, in feet, of \overline{MN} ?

- (A) 10
- (B) 12
- (C) 15
- (D) 16
- (E) 17



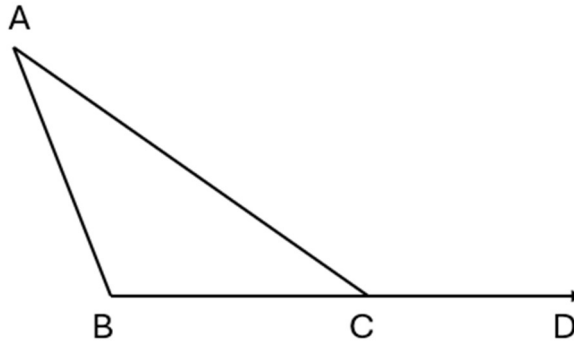
4. What is the perimeter, in feet, of a right triangle with legs that are 6 feet long and 7 feet long, respectively?

- (A) $\sqrt{13}$
- (B) 21
- (C) $\sqrt{85} + 13$

- (D) $\sqrt{85}$
 (E) $\sqrt{85} + \sqrt{13}$

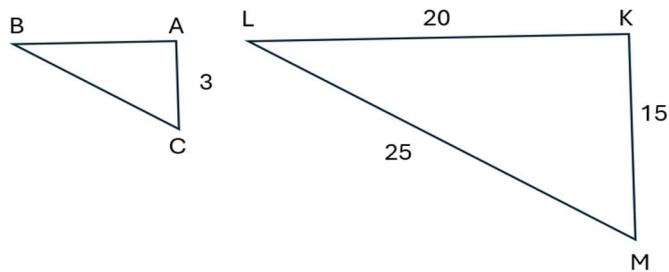
5. In the figure below, $\angle BAC$ measures 30° , angle $\angle ABC$ measures 110° , and points B, C, and D are collinear. What is the measure of $\angle ACD$?

- (A) 150°
 (B) 140°
 (C) 130°
 (D) 120°
 (E) 110°



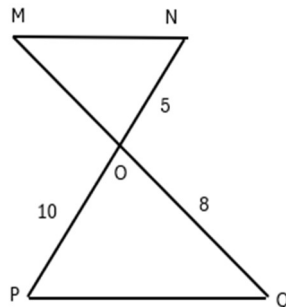
6. In the figure below, where $\triangle ABC \sim \triangle KLM$, lengths given are in centimeters. What is the perimeter, in centimeters, of $\triangle ABC$?

- (A) 14
 (B) 12
 (C) $21\frac{1}{2}$
 (D) 60
 (E) $71\frac{3}{4}$



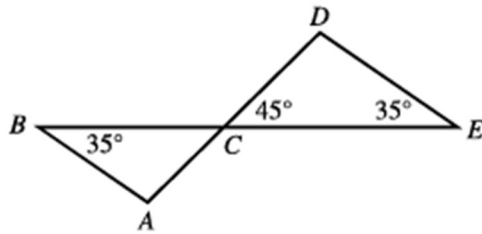
7. In the figure below, $\overline{MN} \parallel \overline{PQ}$ and segment PN intersects segment MQ at O. What is the length of segment MQ?

- (A) 4
 (B) 24
 (C) 12
 (D) 49
 (E) $15\sqrt{7}$



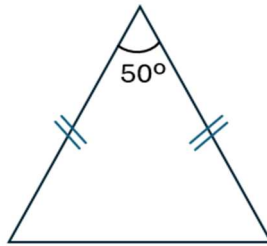
8. In the figure below, C is the intersection of \overline{AD} and \overline{BE} . If it can be determined, what is the measure of $\angle BAC$?

- (A) 80°
- (B) 100°
- (C) 110°
- (D) 45°
- (E) 90°



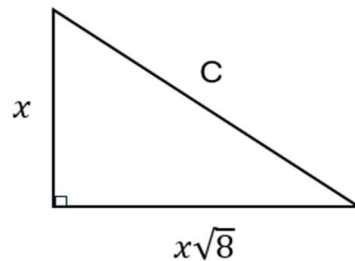
9. The isosceles triangle below has one angle measure as shown. What is the measure of each of the other angles?

- (A) 30°
- (B) 45°
- (C) 50°
- (D) 65°
- (E) 130°



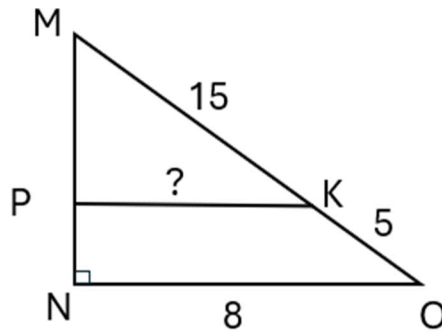
10. In the figure below, what is an expression for C in terms of x ?

- (A) $x^2 + \sqrt{8}$
- (B) $x + 8$
- (C) $3x$
- (D) 8
- (E) $3x + \sqrt{8}$



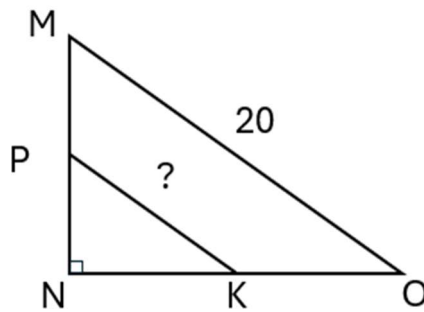
11. In the right triangle $\triangle MON$ below, \overline{PK} is parallel to \overline{NO} , and \overline{PK} is perpendicular to \overline{MN} at P. The length of \overline{MK} is 15 feet, the length of \overline{KO} is 5 feet, and the length of \overline{NO} is 8 feet. What is the length, in feet, of \overline{PK} ?

- (A) 6
- (B) 8
- (C) 125
- (D) $\sqrt{8}$
- (E) $5\sqrt{8}$



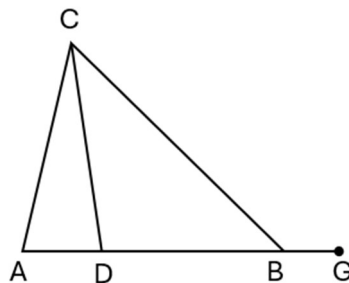
12. In the right triangle $\triangle MON$ below, \overline{PK} is parallel to \overline{NO} , and $\overline{NK} \cong \overline{KO}$. The length of \overline{NK} is 8 feet, the length of \overline{NO} is 16 feet, and the length of \overline{MO} is 20 feet. What is the length, in feet, of \overline{PK} ?

- (A) 10
- (B) 8
- (C) 125
- (D) $\sqrt{8}$
- (E) $5\sqrt{8}$



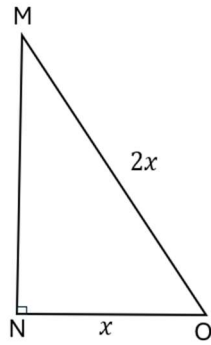
13. In the figure below, A, D, B, and G are collinear. If $\angle CAD$ measures 76° , $\angle BCD$ measures 47° , and $\angle CBG$ measures 140° , what is the degree measure of $\angle ACD$?

- (A) 12°
- (B) 14°
- (C) 17°
- (D) 36°
- (E) 43°



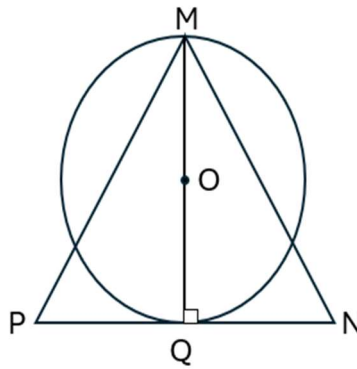
14. The area of the right triangle $\triangle MON$ is:

- (A) $\frac{\sqrt{3}}{2}x^2$
 (B) x^2
 (C) $\frac{\sqrt{5}}{2}x^2$
 (D) $\sqrt{2}x$
 (E) $\frac{3}{2}x^2$



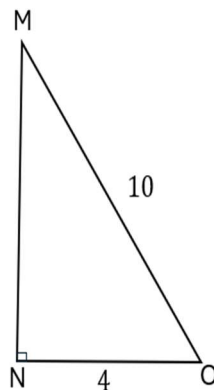
15. In the figure below, equilateral triangle $\triangle MNP$ has a side length of 10 inches. What's the area of the circle centered at O in inches square?

- (A) $\sqrt{75}\pi$
 (B) $\frac{\sqrt{75}}{4}\pi$
 (C) $\frac{75}{4}\pi$
 (D) 25π
 (E) $\sqrt{\frac{75}{4}}\pi$



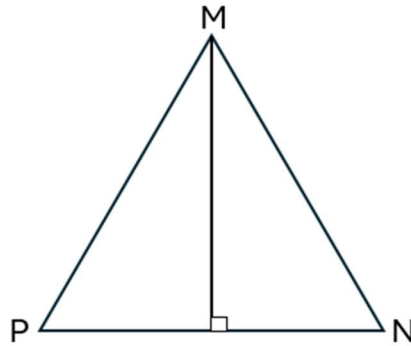
16. In the right triangle below, $MO = 10$ units, and $NO = 4$ units. What is the sine of $\angle MON$?

- (A) $\frac{\sqrt{84}}{10}$
 (B) $\frac{2}{5}$
 (C) $\sqrt{84}$
 (D) $\frac{\sqrt{84}}{4}$
 (E) $\sqrt{\frac{21}{5}}$



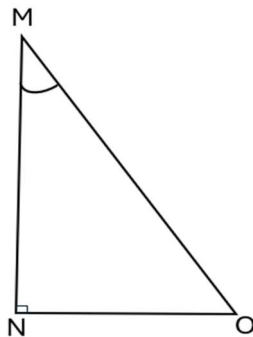
17. In the figure below, equilateral triangle $\triangle MNP$ has a side length of 8 inches. What's the cosine of $\angle MPN$?

- (A) $\frac{\sqrt{48}}{8}$
- (B) $\frac{\sqrt{48}}{4}$
- (C) $\frac{\sqrt{2}}{3}$
- (D) $\frac{4}{\sqrt{84}}$
- (E) $\frac{1}{2}$



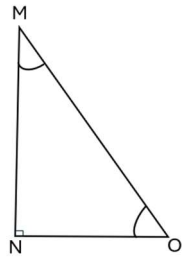
18. In the right triangle $\triangle MON$, the tangent of $\angle OMN$ is $\frac{3}{7}$. What is the length of segment MN?

- (A) 3
- (B) $\sqrt{40}$
- (C) $\sqrt{21}$
- (D) 7
- (E) $\sqrt{\frac{40}{3}}$



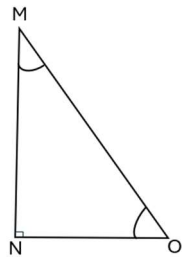
19. In the right triangle $\triangle MON$, the sine of $\angle O$ is $\frac{5}{9}$. What is the length of segment NO?

- (A) 5
- (B) $\sqrt{56}$
- (C) $\sqrt{106}$
- (D) 9
- (E) 45



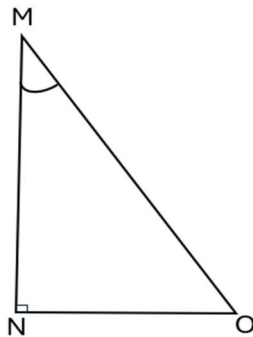
20. In the right triangle $\triangle MON$, the cosine of $\angle O$ is $\frac{3}{8}$. What is the length of segment NO?

- (A) 24
- (B) $\sqrt{73}$
- (C) $\sqrt{55}$
- (D) 8
- (E) 3

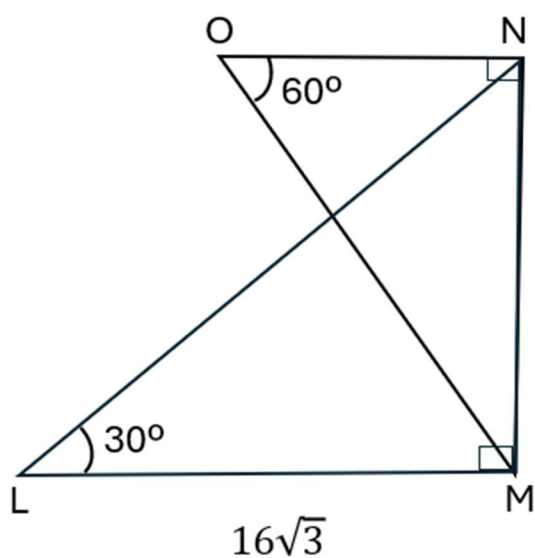


21. In the right triangle $\triangle MON$, the tangent of $\angle M$ is $\frac{3}{7}$. What is the length of segment MO?

- (A) 3
- (B) $\sqrt{40}$
- (C) $\sqrt{58}$
- (D) 7
- (E) 21



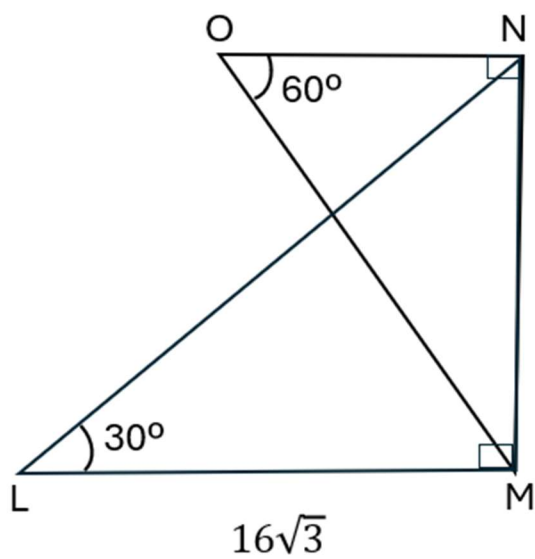
22. For the triangles in the figure below, what is the length of segment MN?



	30°	60°
$\sin\theta$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$
$\cos\theta$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$
$\tan\theta$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$

- (A) 16
- (B) $\sqrt{40}$
- (C) $8\sqrt{3}$
- (D) 24
- (E) 8

23. For the triangles in the figure below, what is the length of segment NO?



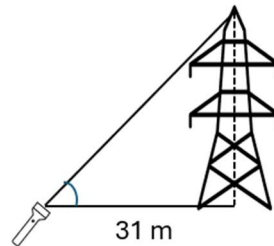
	30°	60°
$\sin\theta$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$
$\cos\theta$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$
$\tan\theta$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$

- (A) $\frac{1}{\sqrt{3}}$

- (B) $\frac{16}{\sqrt{3}}$
 (C) $\frac{\sqrt{3}}{16}$
 (D) $\sqrt{\frac{3}{16}}$
 (E) $\sqrt{\frac{16}{3}}$

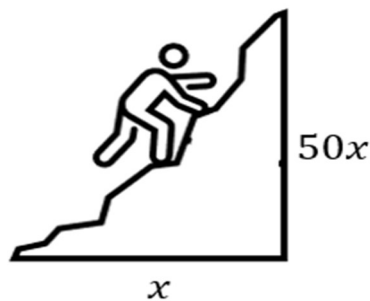
24. A laser is placed at a distance of 31 meters from the base of a tower that is 40 meters tall. What is the angle of the laser from the ground level in order that it points at the top of the tower?

- (A) $\tan^{-1}\left(\frac{31}{40}\right)$
 (B) $\sin^{-1}\left(\frac{31}{40}\right)$
 (C) $\cos^{-1}\left(\frac{31}{40}\right)$
 (D) $\tan^{-1}\left(\frac{40}{31}\right)$
 (E) $\tan\left(\frac{40}{31}\right)$



25. A hiker climbs a mountain that has a base of x units, and a height of $50x$ units. What is the approximate length of the mountain's incline if it's modeled as a straight line?

- (A) $2501x$
 (B) $\sqrt{2504x}$
 (C) $\sqrt{51}x$
 (D) $\sqrt{2501}x$
 (E) $51x^2$



26. In a given isosceles triangle, the measure of each of the base angles is four times the measure of the vertex angle. What is the measure, in degrees, of the vertex angle?

- (A) 20°
 (B) 30°

(C) 45°

(D) 70°

(E) 80°

Answers

- | | | |
|-------|-------|-------|
| 1. E | 11. A | 21. C |
| 2. B | 12. A | 22. A |
| 3. A | 13. C | 23. B |
| 4. C | 14. A | 24. D |
| 5. B | 15. C | 25. D |
| 6. B | 16. A | 26. A |
| 7. C | 17. E | |
| 8. B | 18. D | |
| 9. D | 19. B | |
| 10. C | 20. E | |