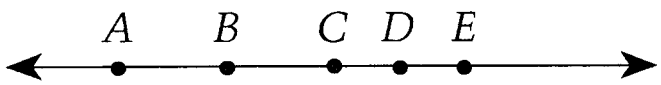
Practice Set 2

1. **What is the perimeter of an equilateral triangle with a side length of 6?**

   (A) 6
   (B) 12
   (C) 18
   (D) 24
   (E) 36

2.

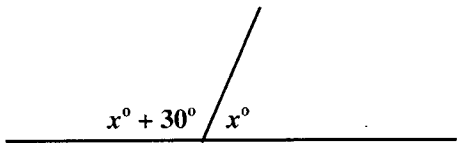


Note: Figure not drawn to scale.

In the figure above, B is the midpoint of AC and D is the midpoint of CE. If $AB = 5$ and $BD = 8$, what is the length of DE?

(A) 8
(B) 6
(C) 5
(D) 4
(E) 3

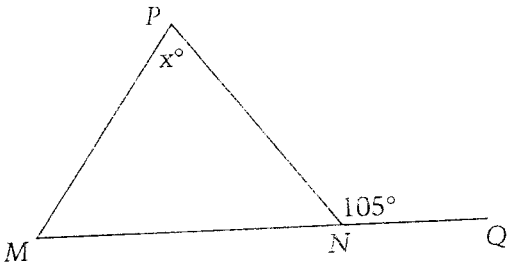
3.



What is the value of x in the figure above?

(A) 70
(B) 75
(C) 85
(D) 105
(E) 180

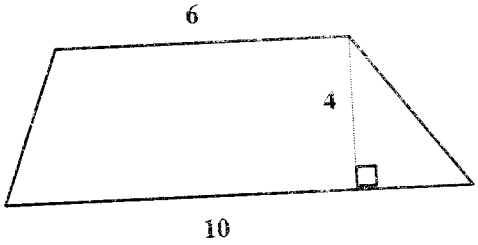
4.



Note: Figure not drawn to scale.
In the figure above, MQ is a straight line. If $PM = PN$, what is the value of x?

(A) 30
(B) 45
(C) 60
(D) 75
(E) 90

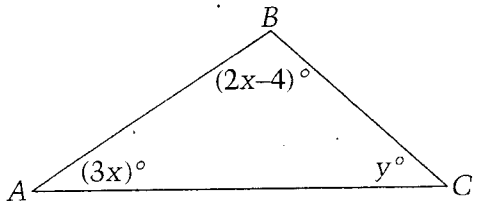
5.



What is the area of the trapezoid in the figure above if base one is 10 and base two is 6?

(A) 24
(B) 30
(C) 32
(D) 40
(E) 60

6.



Note: Figure not drawn to scale.

In the triangle above, if the measure of angle B is 60 degrees, then what is the value of y?

(A) 24
(B) 26
(C) 28
(D) 30
(E) 32

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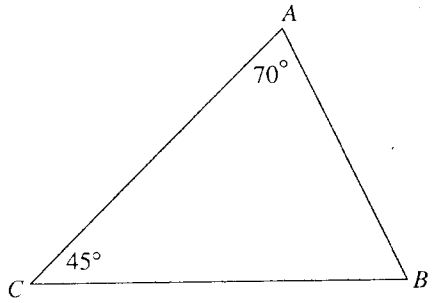
7. How many times larger is the volume of a box 8 by 10 by 12 than the volume of a box 4 by 5 by 6?

(A) 2
(B) 4
(C) 6
(D) 8
(E) 10

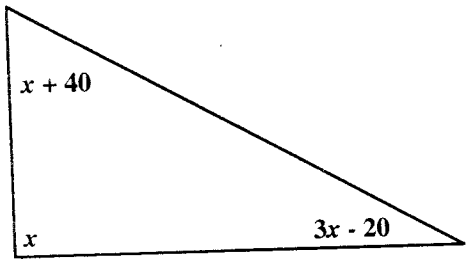
8.



In the triangle above, what is the degree measure of angle B?

(A) 45
(B) 60
(C) 65
(D) 75
(E) 80

9.

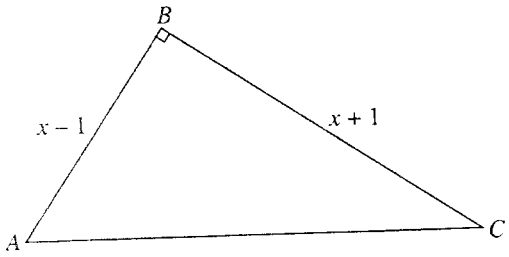


Note: Figure not drawn to scale.

What is the value of x in the figure above?

(A) 22
(B) 32
(C) 40
(D) 64
(E) 90

10.



In the figure above, AB is perpendicular to BC. The lengths of AB and BC are given in terms of x. Which of the following represents the area of ΔABC for all $x > 1$?

(A) x
(B) $2x$
(C) x^2
(D) $x^2 - 1$
(E) $\frac{x^2 - 1}{2}$

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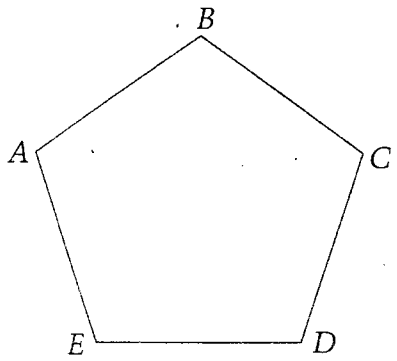
11. A man is tiling his 6 ft. by 9 ft. bathroom floor. If the tiles are 3 inches by 3 inches, how many tiles are needed?

(A) 6
(B) 12
(C) 324
(D) 648
(E) 864

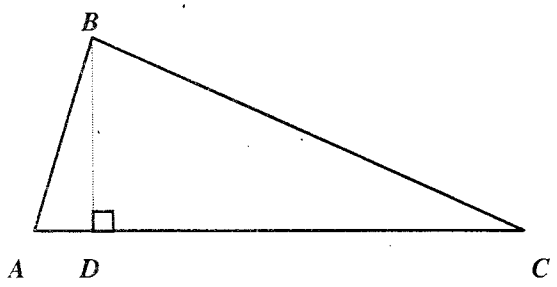
12.



In pentagon $ABCDE$ shown above, each side is 1 centimeter. If a particle starts at point A and travels clockwise 723 centimeters along $ABCDE$, the particle will stop on which point?

(A) A
(B) B
(C) C
(D) D
(E) E

13.



In the figure above, the area of $\Delta ABC = 75$. If $AD = 4$, and $DC = 11$, what is the length of BD?

(A) 5
(B) 7.5
(C) 10
(D) 12.5
(E) 15

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14. If the area of a triangle is 36 and its base is 9, what is the length of the altitude to that base?

(A) 2
(B) 4
(C) 6
(D) 8
(E) 12

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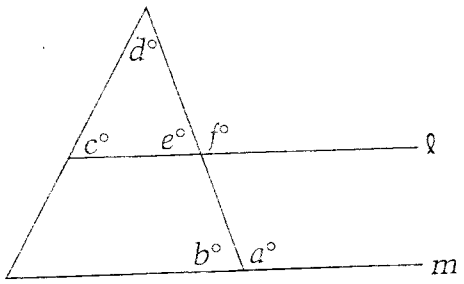
15. If a piece of wire 4 ft long were made into a circle by connecting both ends, what would the radius of the circle be?

(A) 2
(B) $\frac{2}{\pi}$
(C) 4
(D) $\frac{4}{\pi}$
(E) 4π

16.



In the figure above, if $\ell \parallel m$, which of the following must be equal to a?
(A) $b + c$
(B) $b + e$
(C) $c + d$
(D) $d + e$
(E) $d + f$

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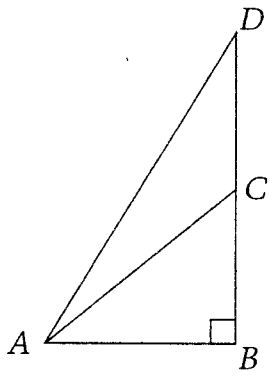
17. A square 10 feet on a side is cut into two isosceles right triangles. If one of those triangles is again cut into two isosceles right triangles, what is the area of one of the smaller triangles?

(A) 10
(B) $10\sqrt{2}$
(C) 25
(D) $25\sqrt{2}$
(E) 50

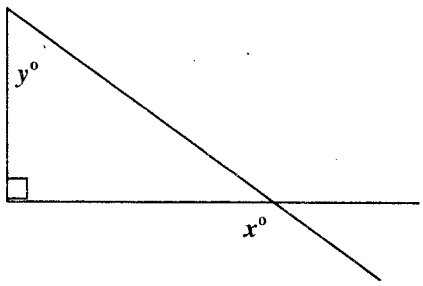
18.



In the figure above, the area of triangle ABC is 6. If $BC = CD$, what is the area of triangle ACD?

(A) 6
(B) 8
(C) 9
(D) 10
(E) 12

19.



In the figure above, what is the value of y in terms of x?

(A) $180 - x$
(B) $90 - x$
(C) $x - 180$
(D) $x - 90$
(E) $2x$

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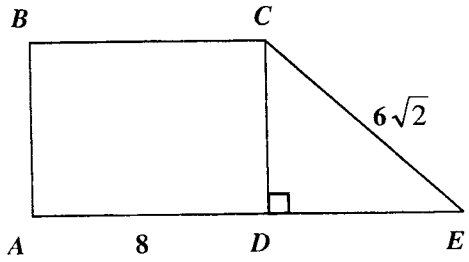
20. What is the minimum number of rectangular tiles, each 12 centimeters by 18 centimeters, needed to completely cover five flat rectangular surfaces, each 60 centimeters by 180 centimeters?

(A) 50
(B) 100
(C) 150
(D) 200
(E) 250

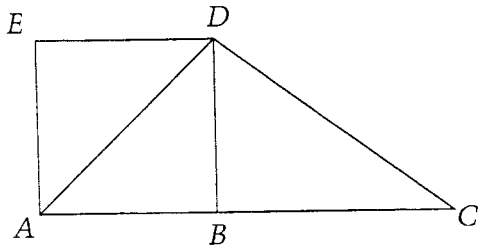
21.



If $DE = CD$, what is the length of the diagonal of rectangle $ABCD$?

(A) $6\sqrt{2}$
(B) 8
(C) 10
(D) $10\sqrt{2}$
(E) 20

22.



In the figure above, side AB of square $ABDE$ is extended to point C. If $BC = 8$ and $CD = 10$, what is the perimeter of triangle ACD?

(A) $18 + 6\sqrt{2}$
(B) $24 + 6\sqrt{2}$
(C) $26 + 6\sqrt{2}$
(D) 30
(E) 36

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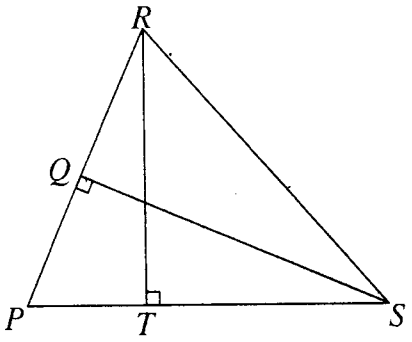
23. What is the maximum number of times 4 distinct lines in a plane can cross?

(A) 3
(B) 4
(C) 5
(D) 6
(E) 7

24.



In ΔPRS above, RT is the altitude to side PS and QS is the altitude to side PR. If $RT = 7$, $PR = 8$, and $QS = 9$, what is the length of PS?

(A) $5\frac{1}{7}$

(B) $6\frac{2}{9}$

(C) $7\frac{7}{8}$

(D) $10\frac{2}{7}$

(E) $13\frac{4}{9}$

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25. If a cube has a surface area of $36n^2$ square feet, what is its volume in cubic feet, in terms of n?

(A) $n^3\sqrt{6}$

(B) $6n^3\sqrt{6}$

(C) $36n^3$

(D) $36n^3\sqrt{6}$

(E) $216n^3$
