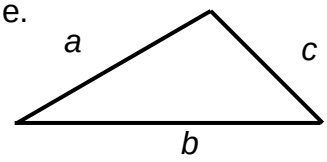
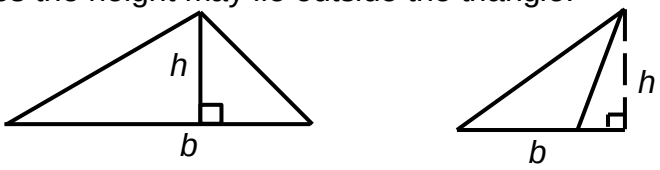
Geometry Review

Here are some formulas and concepts that you will need to review before working on the practice exam.

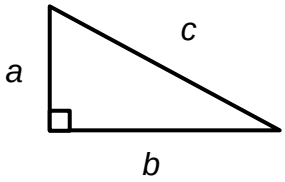
- **Triangles**
  - **Perimeter** or the distance around the triangle is found by adding all of the sides, or, $P = a + b + c$, where P is the perimeter and a, b, and c are the sides of the triangle.



  - **Area** is found by taking half of the product of the base and the height. Or, $A = \frac{1}{2}bh$, where A is the area, b is the base and h is the height. Notice that the height always forms a right angle with the base and, in some cases the height may lie outside the triangle.

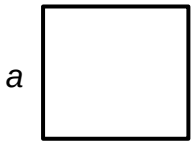


  - The sum of the three angles of any triangle is always 180°.
  - **Pythagorean Theorem** states that for any right triangle, $a^2 + b^2 = c^2$, where c is the hypotenuse, and a and b are the other two sides of the right triangle.

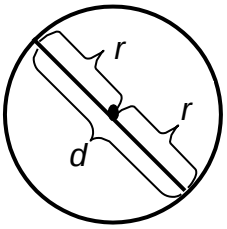


- **Rectangles**
  - **Perimeter** or the distance around the rectangle is found by adding all the sides or by using $P = 2L + 2W$ where P is the perimeter, L is the length and W is the width.
  - **Area** is given by $A = L \cdot W$, where A is the area, L is the length and W is the width.

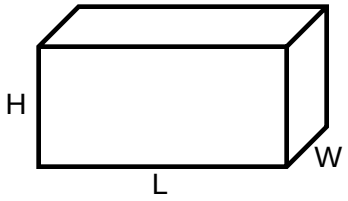
- **Squares**
    - **Perimeter** or the distance around the square is found by multiplying a side by 4, or, $P = 4a$, where P is the perimeter and a is the length of a side.
    - **Area** is found by squaring a side, or, $A = a^2$, where A is the area and a is the length of a side.



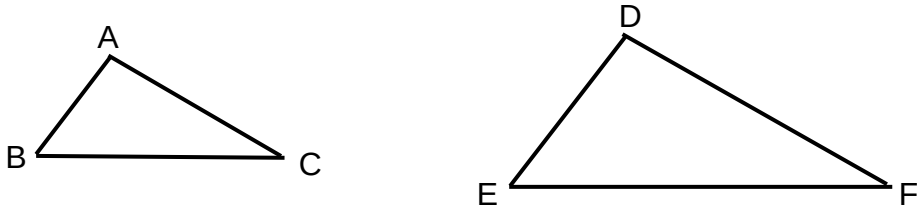
- **Circles**
    - **Circumference** or the distance around the circle is found by using $C = 2 \cdot \pi \cdot r$, or $C = \pi \cdot d$, where C is the circumference, r is the radius, d is the diameter and π can be approximated as 3.14.
    - **Area** is given by $A = \pi \cdot r^2$, where A is the area, r is the radius, and π is approximated as 3.14.
    - If instead of the radius r, the diameter d is given, divide d by 2 to find the radius. In other words, $r = d / 2$.



- **3-Dimensional Boxes**
    - **Volume** is area inside the box which is found by multiplying all three sides, or by using $V = L \cdot W \cdot H$, where V is the volume, L is the length, W is the width and H is the height.



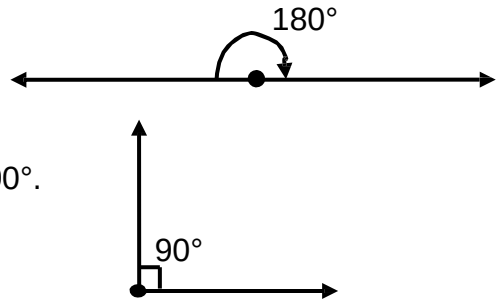
- **Similar Triangles**
  - Two triangles are similar if they have the same "shape", but one is just a reduction or enlargement of the other (like on a copy machine).



  - $\triangle ABC \sim \triangle DEF$ means that triangles ABC and DEF above are similar. In similar triangles the ratios of corresponding sides are equal and the corresponding angles are equal. Therefore for the above triangles we have:

$$\frac{AB}{DE} = \frac{AC}{DF} = \frac{BC}{EF} \text{ and } \angle A = \angle D,\ \angle B = \angle E,\ \angle C = \angle F.$$

- **Angles**
  - A **flat angle** is 180°.
  - A **square (right) angle** is 90°.



Key for the Sample Problems

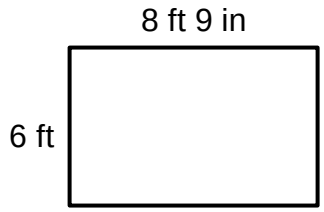
The sample problems start on the next page.

1.	B	2.	D	3.	C
4.	B	5.	D	6.	A
7.	D	8.	A	9.	A
10.	B	11.	A	12.	A
13.	D	14.	A	15.	B
16.	D	17.	B	18.	C
19.	D	20.	A	21.	A
22.	C	23.	D	24.	C
25.	B	26.	C	27.	B
28.	A	29.	B	30.	C

Geometry Sample Problems

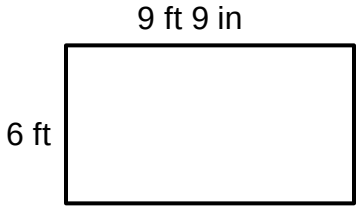
You will find the answers on the bottom of page 3 of this packet.

1. Find the perimeter of the rectangle.



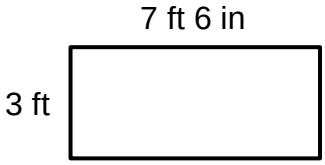
A. 177 in B. 29 ft 6 in
C. 14.9 ft D. 29.8 ft

2. Find the perimeter of the rectangle.



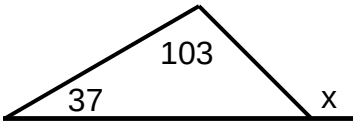
A. 16.8 ft B. 200 in
C. 31.8 ft D. 31 ft 6 in

3. Find the perimeter of the rectangle.



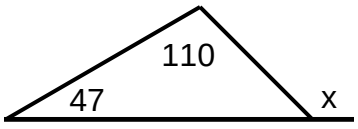
A. 10 ft 6 in B. 126 in
C. 21 ft D. 21.2 ft

4. Find the measure of angle x.



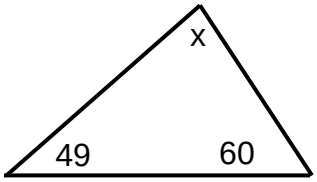
A. 40 B. 140
C. 60 D. 120

5. Find the measure of angle x.



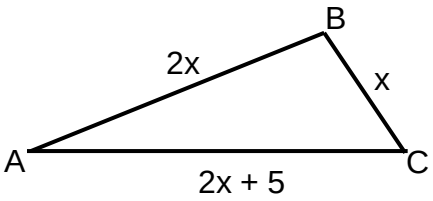
A. 110 B. 47
C. 23 D. 157

6. Find the measure of angle x.



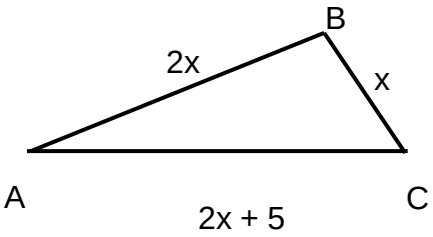
A. 71 B. 60
C. 119 D. 109

7. The perimeter of the triangle is 145 inches. Find the length $\overline{AC}$.



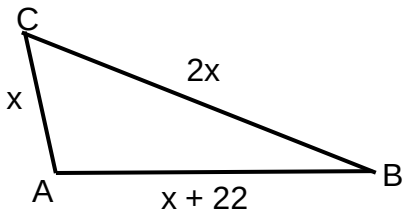
A. 28 inches B. 145 inches
C. 56 inches D. 61 inches

8. The perimeter of the triangle is 135 meters. Find the length $\overline{AC}$.



A. 57 meters B. 26 meters
C. 52 meters D. 135 meters

9. The perimeter of the triangle is 122 feet. Find the length $\overline{AB}$.



A. 47 ft B. 25 ft
C. 50 ft D. 100 ft

10. The perimeter of a square is 60 inches. Find the area.

A. 3600 sq in B. 225 sq in
C. 900 sq in D. 1000 sq in

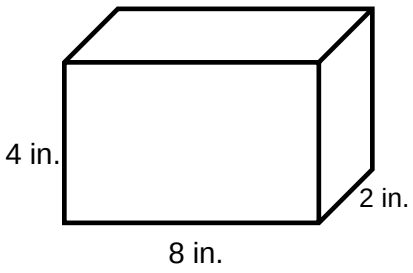
11. The perimeter of a square is 100 centimeters. Find the area.

A. 625 sq cm B. 10,000 sq cm
C. 2500 sq cm D. 1000 sq cm

12. The perimeter of a square is 40 meters. Find the area.

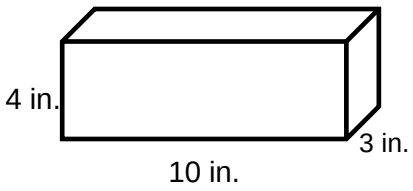
A. 100 sq m B. 1600 sq m
C. 2500 sq m D. 1000 sq m

13. Find the volume of the 3-dimensional box.



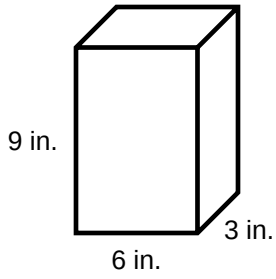
A. 14 cu. in. B. 56 cu. in.
C. 48 cu. in. D. 64 cu. in.

14. Find the volume of the 3-dimensional box.



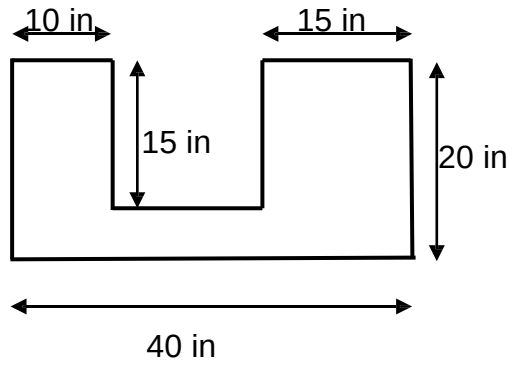
A. 120 cu. in. B. 17 cu. in.
C. 34 cu. in. D. 70 cu. in.

15. Find the volume of the 3-dimensional box.



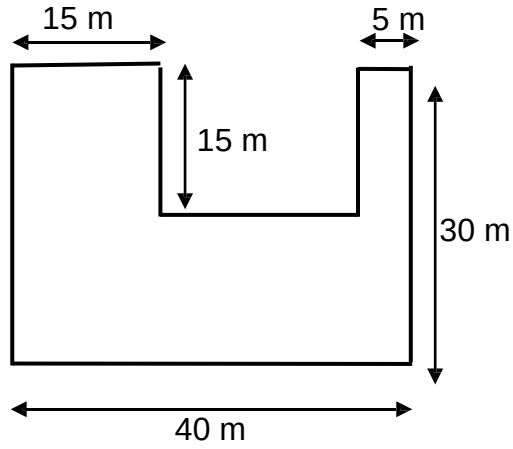
A. 81 cu. in. B. 162 cu. in.
C. 36 cu. in. D. 18 cu. in.

16. Find the area of the figure.



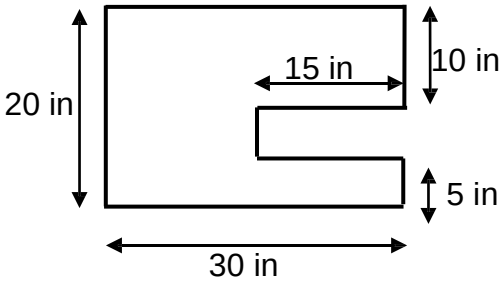
A. 800 sq in B. 650 sq in
C. 500 sq in D. 575 sq in

17. Find the area of the figure.



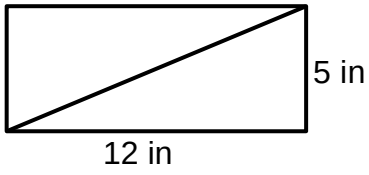
A. 800 sq m B. 900 sq m
C. 805 sq m D. 875 sq m

18. Find the area of the figure.



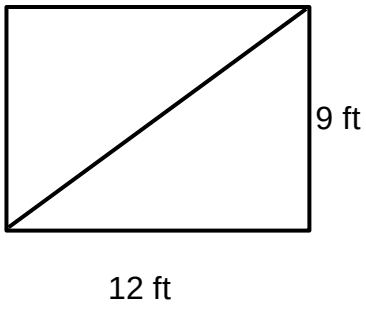
A. 600 sq in B. 550 sq in
C. 525 sq in D. 575 sq in

19. Find the length of the diagonal of the rectangle based on the given information.



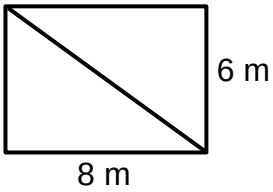
A. 19 in B. 17 in
C. 15 in D. 13 in

20. Find the length of the diagonal of the rectangle based on the given information.



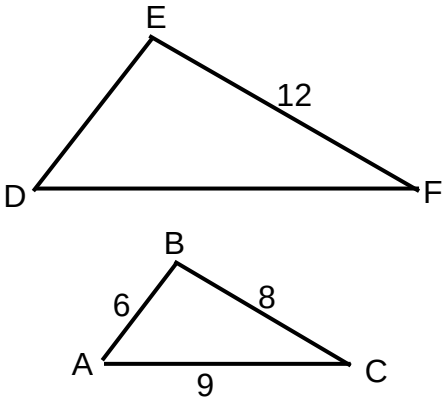
A. 15 ft B. 18 ft
C. 21 ft D. 16 ft

21. Find the length of the diagonal of the rectangle based on the given information.



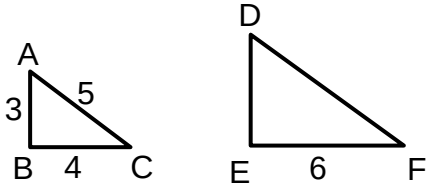
A. 10 in B. 17 in
C. 15 in D. 13 in

22. The two triangles are similar. Find the length of $\overline{DE}$.



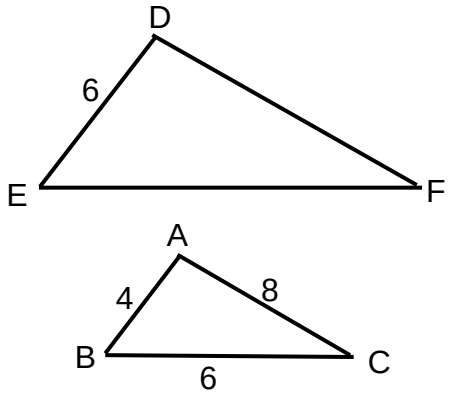
A. 8 ½ B. 10
C. 9 D. 10 ½

23. The two triangles are similar. Find the length of $\overline{DE}$.



A. 5 B. 4
C. 3 ½ D. 4 ½

24. The two triangles are similar. Find the length of $\overline{EF}$.



A. 11 B. 11 ½
C. 9 D. 12 ½

25. The diameter of a circle is 10 inches. What is its circumference?

A. between 15 and 16 inches B. between 31 and 32 inches
C. between 47 and 48 inches D. between 28 and 29 inches

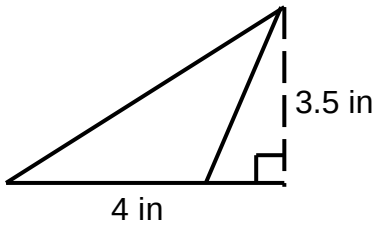
26. The diameter of a circle is 1 centimeter. What is its circumference?

A. between 1 and 2 cm B. between 2 and 3 cm
C. between 3 and 4 cm D. between 4 and 5 cm

27. The radius of a circle is 5 inches. What is its circumference?

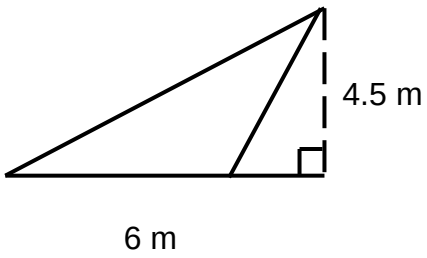
A. between 15 and 16 inches B. between 31 and 32 inches
C. between 47 and 48 inches D. between 28 and 29 inches

28. Find the area of the triangle.



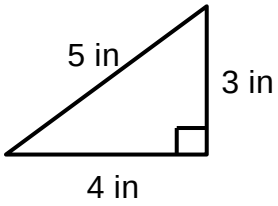
A. 7 sq in B. 14 sq in
C. 28 sq in D. Can't be done

29. Find the area of the triangle.



A. 6.75 sq m B. 13.5 sq m
C. 27 sq m D. Can't be done

30. Find the area of the triangle.



A. 12 sq in B. 15 sq in
C. 6 sq in D. 10 sq in