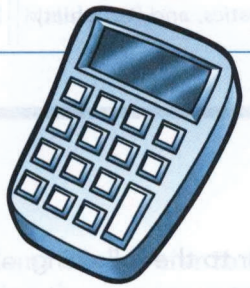


Chapter 9

Basic Geometry

GED Mathematics pp. 223–280
Complete GED pp. 893–921

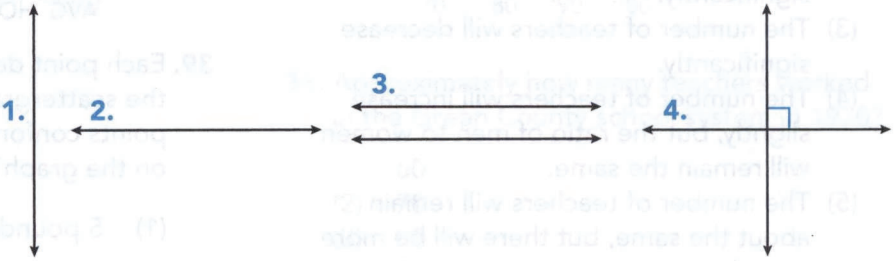
Basic Skills

Note: Geometry uses many special terms. Be sure you are familiar with the vocabulary in this section before you go on. Use the formulas on page 130 as needed.

Directions: Solve each problem.

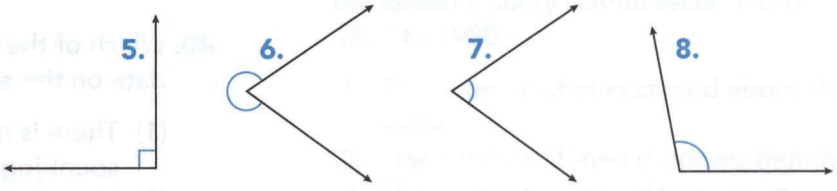
For problems 1–4, use the following terms to describe each line or pair of lines.

horizontal parallel perpendicular vertical



For problems 5–12, use the following terms to describe each angle measurement.

acute obtuse reflex right straight

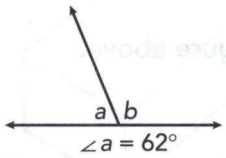


9. 42° **10.** 165° **11.** 180° **12.** 90°

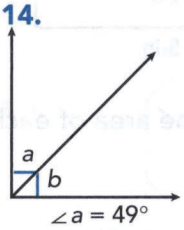
For problems 13–16, use the following terms to describe each pair of angles. Then calculate the measure of $\angle b$ in each figure.

adjacent complementary supplementary vertical

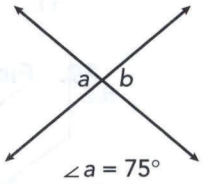
13.



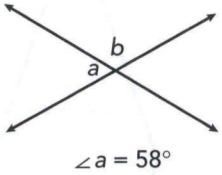
14.



15.



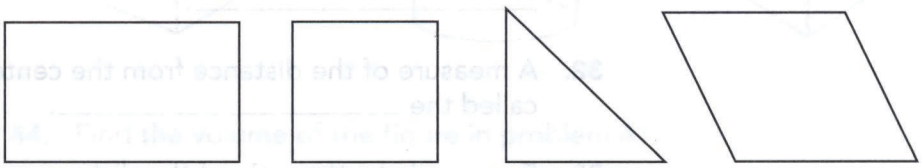
16.



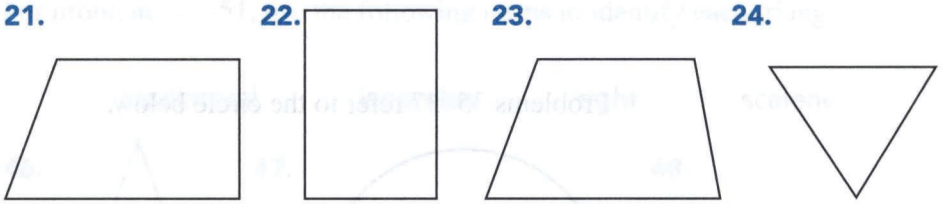
For problems 17–24, use the following terms to identify each plane figure.

parallelogram rectangle square trapezoid triangle

17. **18.** **19.** **20.**



21. **22.** **23.** **24.**



For problems 25–27, use the following terms to fill in the blanks.

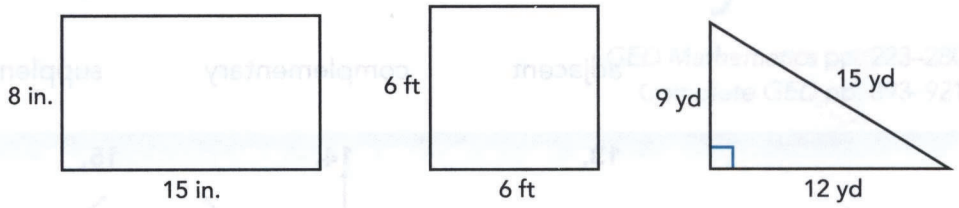
area perimeter volume

25. A measure of the distance around a plane figure is called the _____.

26. A measure of the amount of space inside a 3-dimensional figure is called the _____.

27. A measure of the amount of surface on a plane figure is called the _____.

28. Find the perimeter of each figure.



29. Find the area of each figure above.

For problems 30–33, use the following terms to fill in the blanks.

circumference diameter π (pi) radius

30. A measure of the distance around a circle is called the _____.

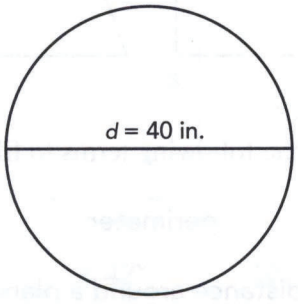
31. A measure of the distance across a circle is called the _____.

32. A measure of the distance from the center of a circle to its edge is called the _____.

33. For any circle, the ratio of the distance around the circle to the distance across the circle is known as _____.

34. What is the total number of degrees in a circle?

Problems 35–37 refer to the circle below.



35. Find the radius of the circle.

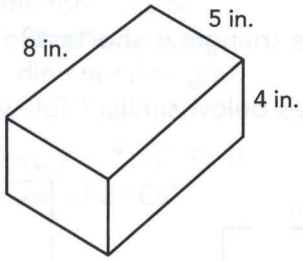
36. Calculate the circumference of the circle.

37. Calculate the area of the circle.

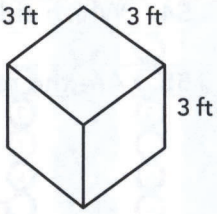
For problems 38–43, use the following terms to identify each solid figure.

cone cube cylinder rectangular solid square pyramid

38.

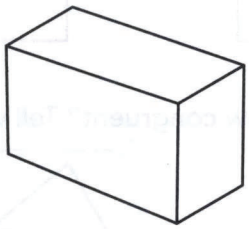


39.

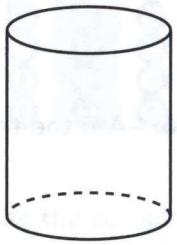


40.

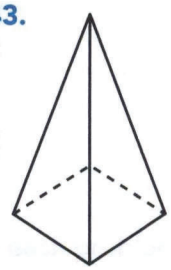
41.



42.



43.



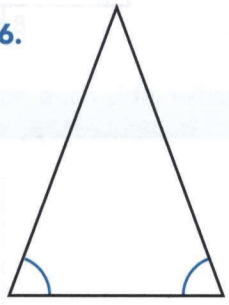
44. Find the volume of the figure in problem 41.

45. Find the volume of the figure in problem 42.

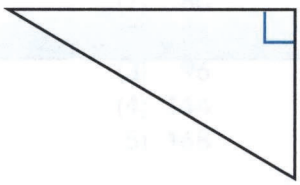
For problems 46–51, use the following terms to identify each triangle.

equilateral isosceles right scalene

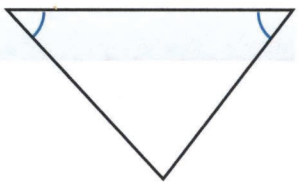
46.



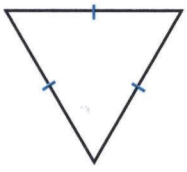
47.



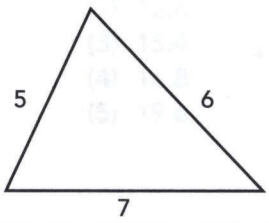
48.



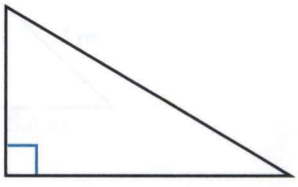
49.



50.



51.



For problems 52–54, use triangle ABC, in which $\angle A = 45°$ and $\angle C = 77°$.

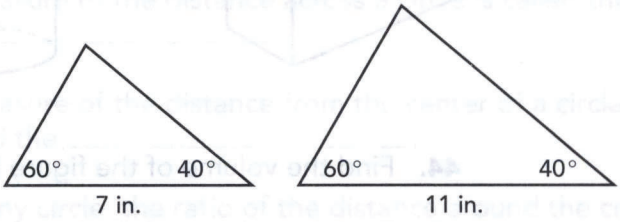
52. What is the measurement of $\angle B$?

53. Which side of the triangle is longest?

54. Which side of the triangle is shortest?

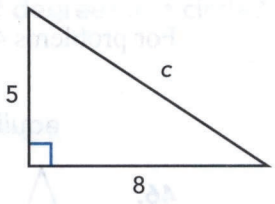
55. Are the rectangles below similar? Tell why or why not.

56. Are the triangles below congruent? Tell why or why not.



57. Which of the following expresses the Pythagorean relationship for the triangle below?

(1) $5^2 + c^2 = 8^2$
(2) $8^2 - 5^2 = c^2$
(3) $5^2 + 8^2 = c^2$



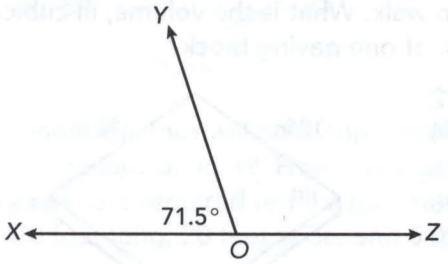
Answers are on page 146.

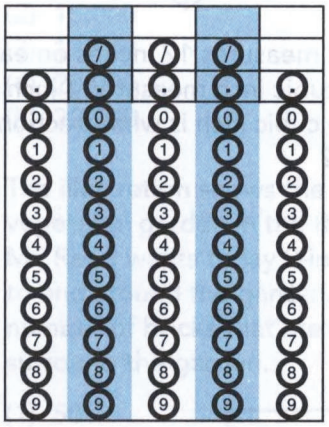
GED PRACTICE

PART I

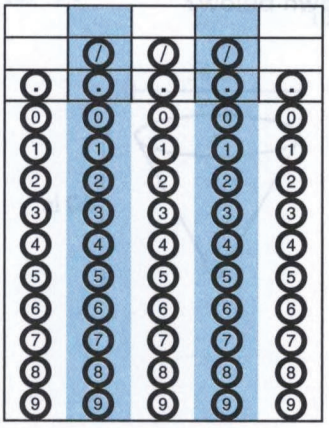
Directions: You may use a calculator to solve the following problems. Use the formulas on page 130 as needed. For problems 1–3, mark each answer on the corresponding number grid.

1. In the illustration below, $\angle XOY = 71.5°$. Find the measurement, in degrees, of $\angle YOZ$.

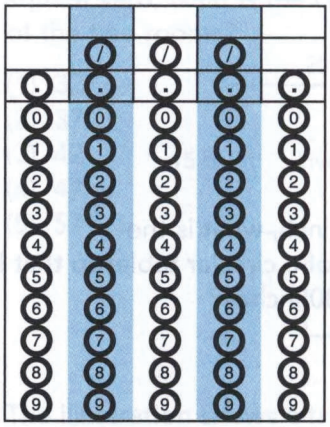




2. A square measures $\frac{5}{8}$ inch on each side. What is the area of the square in square inches?



3. Find the perimeter, in meters, of an equilateral triangle that measures 1.35 meters on each side.



Choose the correct answer to each problem.

4. Find the perimeter, in inches, of a rectangle that is $10\frac{1}{2}$ inches long and 8 inches wide.

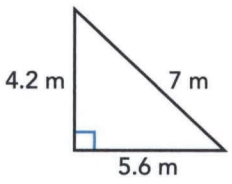
(1) $18\frac{1}{2}$
(2) 32
(3) 37
(4) 42
(5) 47

5. What is the area, in square inches, of the rectangle in the last problem?

(1) 80
(2) 84
(3) 96
(4) 144
(5) 168

6. What is the perimeter, in meters, of the triangle below?

(1) 9.8
(2) 12.6
(3) 15.4
(4) 16.8
(5) 19.6



7. Find the area, in square meters, of the triangle in the last problem. Round your answer to the nearest tenth of a meter.

(1) 11.8
(2) 12.4
(3) 15.6
(4) 19.6
(5) 23.5

8. To the nearest inch, what is the circumference of a circular tabletop that has a diameter of 30 inches?

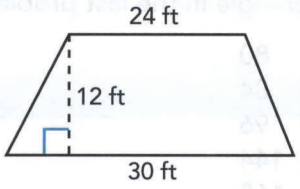
(1) 47
(2) 83
(3) 94
(4) 123
(5) 188

9. To the nearest square inch, what is the area of the tabletop described in the last problem?

(1) 283
(2) 354
(3) 530
(4) 707
(5) 914

10. Find the area, in square feet, of the figure below.

(1) 162
(2) 228
(3) 262
(4) 324
(5) 396



11. Each base angle of an isosceles triangle measures 72°. What is the measurement of the vertex angle?

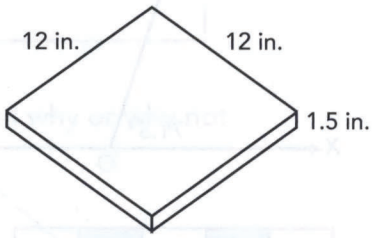
(1) 18°
(2) 36°
(3) 54°
(4) 72°
(5) 98°

12. What is the perimeter, in meters, of a square that measures 0.5 meter on each side?

(1) 4.0
(2) 2.5
(3) 2.0
(4) 1.5
(5) 1.0

13. The illustration shows a paving block for a garden walk. What is the volume, in cubic inches, of one paving block?

(1) 72
(2) 144
(3) 216
(4) 288
(5) 720

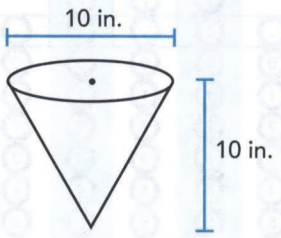


14. One cubic foot measures 12 inches on each side, and one cubic inch measures 1 inch on each side. One cubic inch is what fraction of one cubic foot?

(1) $\frac{1}{144}$
(2) $\frac{1}{360}$
(3) $\frac{1}{1449}$
(4) $\frac{1}{1728}$
(5) $\frac{1}{3600}$

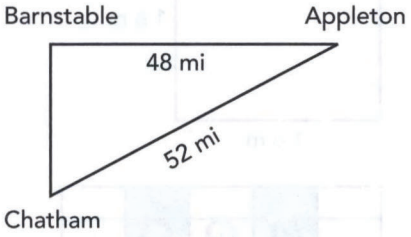
15. To the nearest cubic inch, what is the volume of the cone shown below?

(1) 262
(2) 328
(3) 393
(4) 524
(5) 647



16. Barnstable is directly west of Appleton, and Chatham is directly south of Barnstable. Use the distances in the illustration to calculate the distance, in miles, from Barnstable to Chatham.

(1) 20
(2) 24
(3) 36
(4) 40
(5) 50

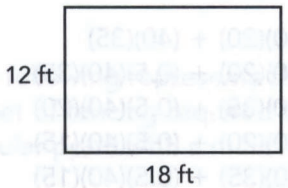


17. One cubic foot will hold approximately 7.5 gallons of liquid. How many gallons of water are required to fill a pool that is 30 feet long, 20 feet wide, and 5 feet deep?

(1) 12,500
(2) 15,000
(3) 17,500
(4) 20,000
(5) 22,500

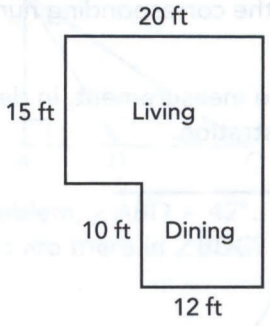
18. The illustration shows the dimensions of a vegetable garden in the Reeds' backyard. Mr. Reed wants to lay 9-inch-long bricks end to end around the garden. Find the minimum number of bricks that are required to surround the garden.

(1) 50
(2) 60
(3) 70
(4) 80
(5) 90



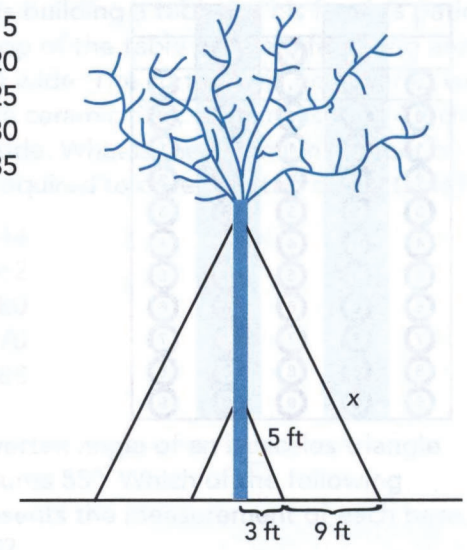
19. The diagram shows the floor plan of the living room and the dining room of the Reeds' home. Rounded to the nearest square yard, what is the combined floor area of the two rooms?

(1) 32
(2) 37
(3) 42
(4) 47
(5) 57



20. The illustration shows a transplanted tree supported by two sets of wires. The 5-foot-long wire is parallel to the longer wire. Find the length, in feet, of the longer wire.

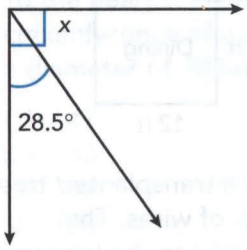
(1) 15
(2) 20
(3) 25
(4) 30
(5) 35

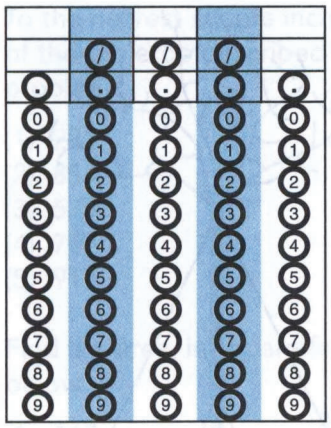


PART II

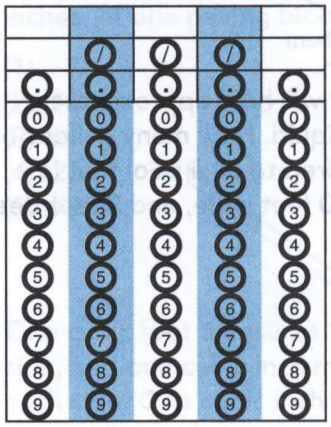
Directions: Solve the following problems without a calculator. Use the formulas on page 130 as needed. For problems 21 and 22, mark each answer on the corresponding number grid.

21. Find the measurement, in degrees, of $\angle x$ in the illustration.





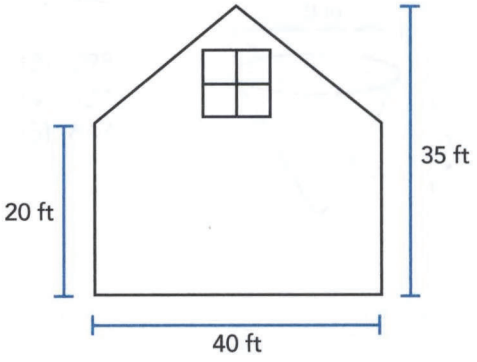
22. What is the area, in square meters, of the figure below?



Choose the correct answer to each problem.

23. The illustration shows the dimensions of the side of a barn. Which of the following represents the area, in square feet, of the side of the barn?

(1) (40)(20) + (40)(35)
(2) (40)(20) + (0.5)(40)(35)
(3) (40)(35) + (0.5)(40)(20)
(4) (40)(20) + (0.5)(40)(15)
(5) (40)(35) + (0.5)(40)(15)



24. In a circle, C represents circumference, r represents radius, and d represents diameter. Which of the following represents π?

(1) $\frac{C}{r}$

(2) $\frac{r}{d}$

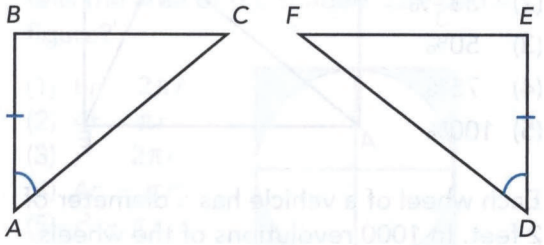
(3) $\frac{C}{d}$

(4) $\frac{r}{C}$

(5) $\frac{2r}{C}$

25. In the illustration below $AB = DE$ and $\angle A = \angle D$. Which of the following, together with the given information, is enough to guarantee that the triangles are congruent?

(1) $AC = DF$
(2) $\angle C = \angle F$
(3) $\angle A = \angle E$
(4) $AB = DF$
(5) $\angle C = \angle D$

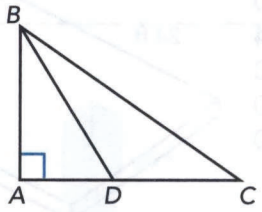


26. Which of the following represents the number of feet of fencing required to go around a circular pond with a radius of 12 feet?

(1) 6π
(2) 12π
(3) 18π
(4) 20π
(5) 24π

27. In the illustration below, line segment CD represents the base of triangle BCD. Which line segment represents the height of triangle BCD?

(1) BC
(2) BD
(3) AD
(4) AC
(5) AB



28. In the last problem, $\angle ABD = 42°$. How many degrees are there in $\angle BDC$?

(1) 108°
(2) 116°
(3) 128°
(4) 132°
(5) 158°

29. Tom is building a table for his family's patio. The top of the table will be 6 feet long and 3 feet wide. The surface will be covered with square ceramic tiles, each measuring 4 inches on a side. What is the minimum number of tiles required to cover the top of the table?

(1) 144
(2) 162
(3) 180
(4) 270
(5) 288

30. The vertex angle of an isosceles triangle measures 55°. Which of the following represents the measurement of each base angle?

(1) $90° - 55°$

(2) $180° - 55°$

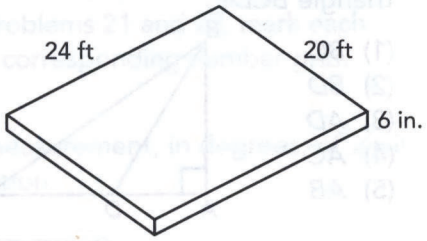
(3) $2(180° - 55°)$

(4) $\frac{180° - 55°}{2}$

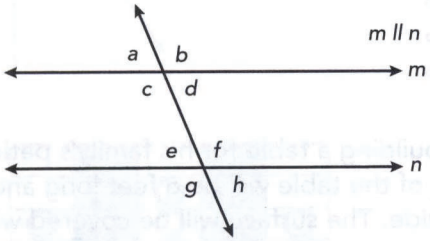
(5) $180° - \frac{55°}{2}$

31. The illustration below shows the concrete slab that will form the floor of a garage. Find the volume of the slab in cubic feet.

(1) 120
(2) 144
(3) 180
(4) 240
(5) 480



For problems 32 and 33, refer to the illustration below.



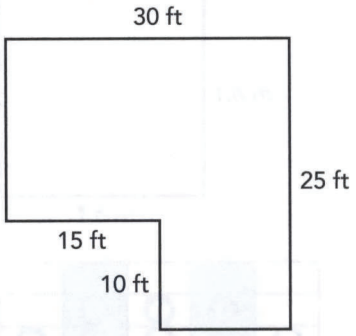
32. If $\angle a = 57°$, which other angles measure 57°?

(1) $\angle b, \angle c, \angle g$
(2) $\angle d, \angle f, \angle g$
(3) $\angle b, \angle g, \angle h$
(4) $\angle c, \angle e, \angle g$
(5) $\angle d, \angle e, \angle h$

33. What is the sum of angles *a*, *b*, *c*, and *d*?

(1) 360°
(2) 270°
(3) 180°
(4) 135°
(5) 90°

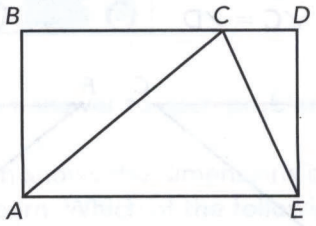
34. The illustration shows the plan of an L-shaped deck. Which of the following represents the area of the deck in square feet?



(1) (30)(15) + (15)(10)
(2) (30)(25) + (15)(10)
(3) (30)(15) + (25)(10)
(4) (30)(10) + (25)(15)
(5) (30)(15) − (10)(15)

35. The area of triangle *ACE* below is what percent of the area of rectangle *ABDE*?

(1) 25%
(2) $33\frac{1}{3}\%$
(3) 50%
(4) 75%
(5) 100%

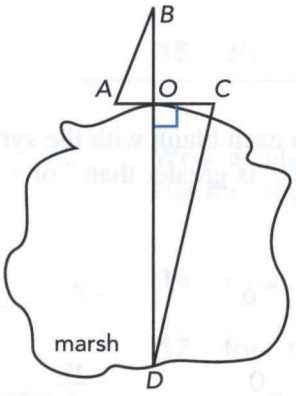


36. Each wheel of a vehicle has a diameter of 2 feet. In 1000 revolutions of the wheels, approximately how far does the vehicle travel?

(1) less than 1 mile
(2) 1–2 miles
(3) 2–3 miles
(4) 3–4 miles
(5) more than 5 miles

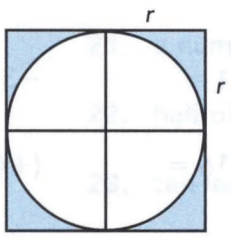
37. Fred wants to know the distance across a marsh on his land. The illustration shows a drawing that he made of the marsh and some carefully staked out measurements. $AO = 12$ feet, $BO = 40$ feet, and $CO = 30$ feet. $\angle BAO = \angle DCO$. Use these measurements to calculate the distance DO across the marsh in feet.

(1) 120
(2) 100
(3) 90
(4) 80
(5) 75



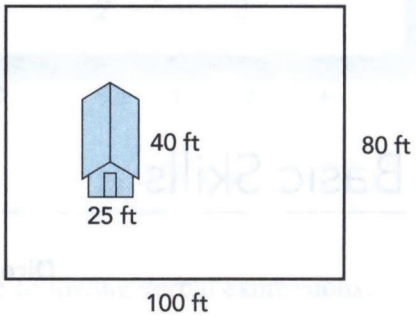
38. The illustration shows a large circle inscribed on four small squares. The small squares measure r on each side. Which expression tells the area of the shaded part of the figure?

(1) $8r - 2\pi r$
(2) $4r - \pi r$
(3) $r^2 - 2\pi r$
(4) $4r^2 - \pi r^2$
(5) $r^2 - \pi r$



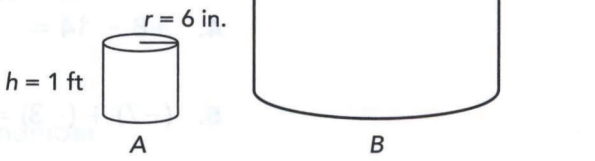
39. The illustration shows the dimensions of a building lot and the dimensions of a house that sits on the lot. The house occupies what percent of the area of the lot?

(1) 20%
(2) 15%
(3) $12\frac{1}{2}\%$
(4) 10%
(5) 8%



40. Max uses the small cylindrical container (A) to fill the large cylindrical container (B) with water. How many times does Max have to pour the contents of the small container in order to fill the large container?

(1) 8
(2) 16
(3) 24
(4) 48
(5) 64



Answers are on page 147.

21. (4) twice

$\frac{\text{lion}}{\text{elephant}} = \frac{50}{25} = \frac{2}{1}$

22. (2) 10

15 min $= \frac{15}{60} = \frac{1}{4}$ hr

$d = rt = 40 \times \frac{1}{4} = 10$ miles

23. (4) 4–5

$\frac{\text{miles}}{\text{minutes}} = \frac{70}{60} = \frac{5}{x}$

$70x = 300$

$x = 4.28$ or 4–5 minutes

24. (3) 5.5

total $= 10 + 4 + 1 + 7 + 2 + 5 +$

$8 + 7 + 4 + 7 = 55$

$\frac{55}{10} = 5.5$

25. (3) 6

in order: 1 2 4 4 5 7 7 7 8 10

$\frac{5+7}{2} = \frac{12}{2} = 6$

26. (4) 7

7 was chosen most frequently.

27. (1) 15,000

The line stops halfway between 10 thousand and 20 thousand.

28. (3) 1990

29. (5) $\frac{30,000}{40,000}$

1985 = 40,000 and 2000 = 70,000

$\frac{\text{change}}{\text{original}} = \frac{70,000 - 40,000}{40,000} = \frac{30,000}{40,000}$

30. (2) 1980–1985

The graph rises most sharply for these 5 years.

31. (4) The number of users will increase by about 10,000.

Every 5 years starting in 1985, the number of households with cable TV access rose about 10,000.

32. (3) twice

a year = 24%

a week or two = 12%

$\frac{24\%}{12\%} = \frac{2}{1}$

33. (2) $\frac{1}{2}$

a few months = 48% → 50% $= \frac{1}{2}$

34. (3) 180

indefinitely = 15% and 1198 → 1200

$0.015 \times 1200 = 180$

35. (3) 80

men + women = 15 + 65 = 80

36. (4) The number of men increased by about 10.

The bars for men rise from about 15 to about 25.

37. (2) 45

The bar stops halfway between 40 and 50.

38. (5) The number of teachers will remain about the same, but there will be more men than women.

The trend is that the number of men increases while the number of women decreases, but the total remains about 80.

39. (4) 20 pounds – $1\frac{1}{2}$ hours

The person who lost 20 pounds jogged an average of only $1\frac{1}{2}$ hours per week. This point is farthest off the generally rising line corresponding to weight loss and hours of jogging.

40. (2) More jogging results in greater weight loss.

Generally, the greater the weight loss, the more hours the participants spent jogging.

Chapter 9

Basic Skills, page 82

1. vertical

2. horizontal

3. parallel and horizontal

4. perpendicular

5. right

6. reflex

7. acute

8. obtuse

9. acute

10. obtuse

11. straight

12. right

13. supplementary or adjacent

$\angle b = 180° - 62° = 118°$

14. complementary or adjacent

$\angle b = 90° - 49° = 41°$

15. vertical

$\angle b = 75°$ because vertical angles are equal.

16. adjacent or supplementary

$\angle b = 180° - 58° = 122°$ because these adjacent angles are supplementary.

17. rectangle

18. square

19. triangle

20. parallelogram

21. trapezoid

22. rectangle

23. trapezoid

24. triangle

25. perimeter

26. volume

27. area

28. $P = 2l + 2w$
$P = 2(15) + 2(8) = 30 + 16 = 46$ in.

$P = 4s$
$P = 4(6) = 24$ ft

$P = s_1 + s_2 + s_3$
$P = 9 + 12 + 15 = 36$ yd

29. $A = lw$
$A = (15)(8) = 120$ sq in.

$A = s^2$
$A = 6^2$
$A = (6)(6) = 36$ sq ft

$A = \frac{1}{2}bh$

$A = \frac{1}{2}(12)(9) = 54$ sq yd

30. circumference

31. diameter

32. radius

33. π (pi)

34. 360°

35. $r = \frac{d}{2} = \frac{40}{2} = 20$ in.

36. $C = \pi d$
$C = 3.14(40) = 125.6$ in.

37. $A = \pi r^2$
$A = 3.14(20)^2 = 3.14(400) = 1256$ sq in.

38. rectangular solid

39. cube

40. cone

41. rectangular solid

42. cylinder

43. square pyramid

44. $V = lwh$
$V = (8)(5)(4) = 160$ cu in.

45. $V = s^3$
$V = 3^3 = 3 \times 3 \times 3 = 27$ cu ft

46. isosceles

47. right

48. isosceles

49. equilateral

50. scalene

51. right

52. $\angle B = 180° - 45° - 77° = 58°$

53. Side AB is longest because it is opposite the largest angle, $\angle C$.

54. Side BC is shortest because it is opposite the smallest angle, $\angle A$.

55. Yes

The ratio of the length to the width for both triangles is 4:3.

8:6 = 4:3 and 12:9 = 4:3

56. No

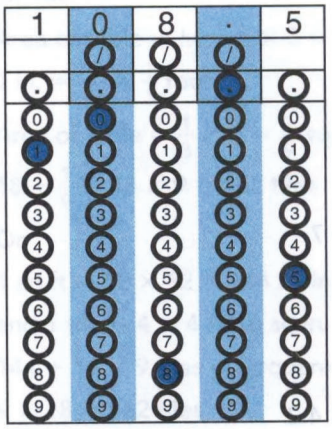
Although the angles are the same, the corresponding sides are not equal.

57. (3) $5^2 + 8^2 = c^2$

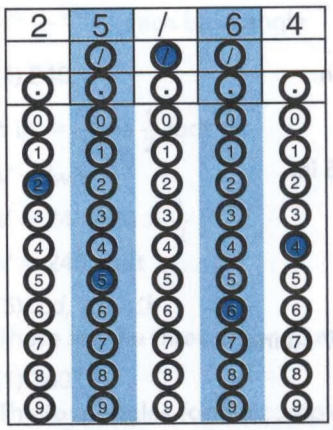
The Pythagorean relationship states that, for a right triangle, the sum of the squares of the legs, 5 and 8, equals the square of the hypotenuse, c.

GED Practice, Part I, page 87

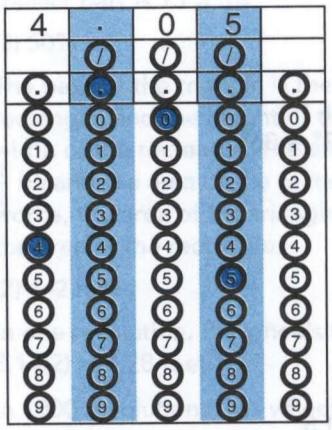
1. $180° - 71.5° = 108.5°$



2. $A = s^2 = (\frac{5}{8})^2 = \frac{5}{8} \times \frac{5}{8} = \frac{25}{64}$ sq in.



3. $P = 3s = 3(1.35) = 4.05$ m



4. (3) 37

$P = 2l + 2w$

$P = 2(10\frac{1}{2}) + 2(8)$

$P = 21 + 16$

$P = 37$ in.

5. (2) 84

$A = lw$

$A = 10.5 \times 8$

$A = 84$ sq in.

6. (4) 16.8

$P = s_1 + s_2 + s_3$

$P = 4.2 + 5.6 + 7$

$P = 16.8$ m

7. (1) 11.8

$A = \frac{1}{2}bh$

$A = 0.5 \times 5.6 \times 4.2$

$A = 11.76 \rightarrow 11.8$ m^2

8. (3) 94

$C = \pi d$

$C = 3.14 \times 30$

$C = 94.2 \rightarrow 94$ in.

9. (4) 707

$r = \frac{d}{2} = \frac{30}{2} = 15$ in.

$A = \pi r^2$

$A = 3.14(15)^2$

$A = 3.14(225)$

$A = 706.5 \rightarrow 707$ sq in.

10. (4) 324

$A = \frac{1}{2}(b_1 + b_2)h$

$A = \frac{1}{2}(24 + 30) \times 12$

$A = 6(54)$

$A = 324$ sq ft

11. (2) 36°

$180° - 72° - 72° = 36°$

12. (3) 2.0

$P = 4s$

$P = 4(0.5)$

$P = 2.0$ m

13. (3) 216

$V = lwh$

$V = 12 \times 12 \times 1.5$

$V = 216$ cu in.

14. (4) $\frac{1}{1728}$

$V = s^3$

$V = (12)^3$

$V = 12 \times 12 \times 12$

$V = 1728$ cu in.

$\frac{1 \text{ cu in.}}{1 \text{ cu ft}} = \frac{1}{1728}$

15. (1) 262

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}(3.14)(5)^2(10)$

$V = 261.6 \rightarrow 262$ cu in.

16. (1) 20

$a^2 + b^2 = c^2$

$a^2 + 48^2 = 52^2$

$a^2 + 2304 = 2704$

$a^2 = 400$

$a = \sqrt{400}$

$a = 20$ miles

17. (5) 22,500

$V = lwh$

$V = 30 \times 20 \times 5$

$V = 3000$ cu ft

$7.5 \times 3000 = 22{,}500$ gallons

18. (4) 80

$P = 2l + 2w$

$P = 2(18) + 2(12)$

$P = 36 + 24$

$P = 60$

9 in. $= \frac{9}{12} = 0.75$ foot

$60 \div 0.75 = 80$ bricks

19. (4) 47

$A = lw + lw$

$A = 20(15) + 10(12)$

$A = 300 + 120$

$A = 420$ sq ft

1 sq yd $= 3 \times 3 = 9$ sq ft

$420 \div 9 = 46.6 \rightarrow 47$ sq yd

20. (2) 20

base of large triangle $= 3 + 9 = 12$ ft

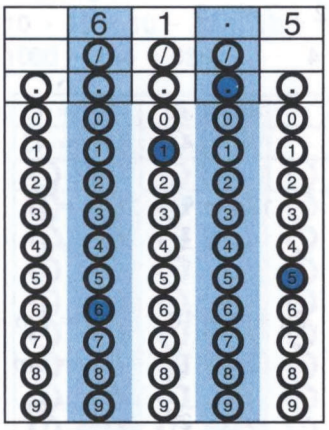
$\frac{\text{short side}}{\text{long side}} = \frac{3}{5} = \frac{12}{x}$

$3x = 60$

$x = 20$ ft

GED Practice, Part II, page 90

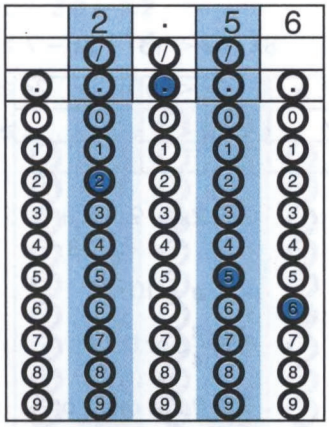
21. $90° - 28.5° = 61.5°$



22. $A = s^2$

$A = (1.6)^2$

$A = 1.6 \times 1.6 = 2.56 \text{ m}^2$



23. (4) (40)(20) + (0.5)(40)(15)

The area is a rectangle + a triangle.

Area of rectangle = (40)(20).

The height of the triangle is 35 − 20 = 15 ft.

Area of triangle is (0.5)(40)(15).

24. (3) $\frac{C}{d}$

For any circle, π is the ratio of the circumference to the diameter.

25. (1) $AC = DF$

This satisfies the *side angle side* requirement for congruence.

26. (5) 24π

$d = 2r = 2(12) = 24$

$C = \pi d$

$C = \pi(24) = 24\pi$

27. (5) AB

The height AB is perpendicular to an extension of the base CD.

28. (4) 132°

$\angle ADB = 180° - 90° - 42° = 48°$

$\angle BDC = 180° - 48° = 132°$

29. (2) 162

Area of table = $lw = 6 \times 3 = 18$ sq ft

4 in. $= \frac{4}{12} = \frac{1}{3}$ foot

Area of 1 tile $= \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$ sq ft

$18 \div \frac{1}{9} = 18 \times 9 = 162$ tiles

Or

1 sq ft $= 12 \times 12 = 144$ sq in.

and 1 tile $= 4 \times 4 = 16$ sq in.

$144 \div 16 = 9$ tiles per square foot

$9 \times 18 = 162$ tiles

30. (4) $\frac{180° - 55°}{2}$

$180° - 55°$ = sum of the two base angles

$\frac{180° - 55°}{2}$ = each base angle

31. (4) 240

6 in. $= \frac{6}{12} = \frac{1}{2}$ foot

$V = lwh$

$V = 24 \times 20 \times \frac{1}{2}$

$V = 240$ cu ft

32. (5) $\angle d$, $\angle e$, $\angle h$

These are the three other acute angles besides $\angle a$.

33. (1) 360°

The four angles form a complete circle.

34. (1) (30)(15) + (15)(10)

The larger part of the deck is 30×15. The smaller part is 15×10.

35. (3) 50%

The base of the triangle is the length of the rectangle, and the height of the triangle is the width of the rectangle. The area of the triangle is $\frac{1}{2}bh$ and the area of the rectangle is bh. In other words, the area of the triangle is $\frac{1}{2}$ or 50% of the area of the rectangle.

36. (2) 1–2 miles

In one revolution, the wheels travel $C = \pi d =$ 3.14(2) = 6.28 feet.

In 1000 revolutions, the wheels travel 1000(6.28) = 6280 feet.

One mile = 5280 feet. Therefore, the wheels travel between 1 and 2 miles.

37. (2) 100

$\frac{\text{short}}{\text{long}} = \frac{12}{40} = \frac{30}{x}$

$12x = 1200$

$x = 100$ feet

38. (4) $4r^2 - \pi r^2$

The area of one small square is r^2, and the area of the large square is $4r^2$.

The area of the circle is πr^2.

The shaded part is the area of the large square minus the area of the circle, or $4r^2 - \pi r^2$.

39. (3) $12\frac{1}{2}\%$

The area of the house is $lw = (40)(25) = 1000$ sq ft.

The area of the lot is $lw = (100)(80) = 8000$ sq ft.

$\frac{\text{area of house}}{\text{area of lot}} = \frac{1000}{8000} = \frac{1}{8} = 12\frac{1}{2}\%$

40. (5) 64

The radius of the small cylinder is $\frac{6}{12} = 0.5$ ft.

$\frac{\text{volume of large container}}{\text{volume of small container}} = \frac{\pi r^2 h}{\pi r^2 h} = \frac{3.14 \times 2^2 \times 4}{3.14 \times (0.5)^2 \times 1} =$

$\frac{4 \times 4}{0.25} = \frac{16}{0.25} = 64$

Chapter 10

Basic Skills, page 94

1. $8 > 0$ $+4 > -6$ $-7 < -3$

2. $\frac{3}{3} = 1$ $-10 < 0$ $-\frac{15}{3} = -5$

3. $-6 > -9$ $\frac{18}{2} = \frac{36}{4}$ $-7 < 2$

4. $+8 - 14 = -6$ $-2 - 11 = -13$

$-3 + 8 = +5$

5. $(-7) + (-3) = -10$ $-10 + 16 = +6$

$(+4) + (-4) = 0$

6. $(-3) - (-4) = -3 + 4 = +1$

$(-7) - (+8) = -7 - 8 = -15$

$12 - (-3) = 12 + 3 = 15$

7. $(-4)(+8) = -32$ $(-9)(-9) = +81$

$(+7)(-10) = -70$

8. $-\frac{1}{3} \cdot 48 = -16$ $-\frac{2}{3} \cdot -\frac{1}{2} = \frac{1}{3}$

$-5 \cdot 0 = 0$

9. $\frac{-20}{-10} = 2$ $-\frac{18}{24} = -\frac{3}{4}$ $-\frac{72}{8} = -9$

10. $7(4 - 9) = 7(-5) = -35$

$3(-4) + 7 = -12 + 7 = -5$

$\frac{8 - 20}{3} = \frac{-12}{3} = -4$

11. $a + 7 = 20$ $8b = 32$ $\frac{c}{3} = 15$

$a = 13$ $b = 4$ $c = 45$

12. $d - 6 = 12$ $12e = 9$ $5 = 2f$

$d = 18$ $e = \frac{3}{4}$ $2\frac{1}{2} = f$

13. $4g - 3 = 25$ $2h + 9 = 10$ $2 = 5m - 3$

$4g = 28$ $2h = 1$ $5 = 5m$

$g = 7$ $h = \frac{1}{2}$ $1 = m$

14. $7n - 2n + 4 = 19$ $6p = p + 10$ $9a - 4 = 3a + 20$

$5n + 4 = 19$ $5p = 10$ $6a - 4 = 20$

$5n = 15$ $p = 2$ $6a = 24$

$n = 3$ $a = 4$

15. $3(y - 5) = 6$ $8x - 3 < 13$ $2s - 7 \geq 9$

$3y - 15 = 6$ $8x < 16$ $2s \geq 16$

$3y = 21$ $x < 2$ $s \geq 8$

$y = 7$

16. $x - 11$

17. $4x$

18. $\frac{x}{5}$

19. $\frac{8}{x}$

20. $30 - x$

21. $x + 9$ or $9 + x$

22. $\frac{1}{2}x$ or $\frac{x}{2}$

23. $2x - 10$

24. $x + 8 = 23$

$x = 15$

25. $5x - 6 = 29$

$5x = 35$

$x = 7$

26. $\frac{1}{2}x + 3 = 10$

$\frac{1}{2}x = 7$

$x = 14$

27. $2x - 9 = x + 4$

$x = 13$

28. $a + 10$

29. $\frac{3}{4}c$ or $0.75c$

30. $0.25t$ or $\frac{1}{4}t$ or $\frac{t}{4}$

31. $\frac{w}{5}$

32. $p - 20$

33. $s - 0.15s$ or $0.85s$

34. $b + 0.06b$ or $1.06b$

35. $w + 6$