

SAT-STYLE GEOMETRY PRACTICE WORKSHEET

99 Original multiple-choice questions • Organized from easier to harder • Topics: Lines, Angles & Triangles; Right Triangle Trigonometry; Similar Triangles; Rectangles

Directions: Select the best answer for each question. Use a calculator when appropriate. Unless otherwise stated, figures are not necessarily drawn to scale.

Lines, Angles & Triangles

1. A line intersects two parallel lines. One corresponding angle measures 58° . What is the measure of the other corresponding angle?
 - A. 58°
 - B. 122°
 - C. 29°
 - D. 116°
2. Two adjacent angles form a straight angle. One angle measures 73° . What is the measure of the other angle?
 - A. 17°
 - B. 73°
 - C. 107°
 - D. 253°
3. Two vertical angles are formed by intersecting lines. If one angle is 41° , what is the measure of its vertical angle?
 - A. 41°
 - B. 49°
 - C. 139°
 - D. 180°
4. A triangle has angles measuring 46° and 71° . What is the measure of its third angle?
 - A. 53°
 - B. 63°
 - C. 73°
 - D. 109°
5. An exterior angle of a triangle measures 124° . One remote interior angle measures 57° . What is the other remote interior angle?
 - A. 57°
 - B. 67°
 - C. 77°
 - D. 181°
6. Two parallel lines are cut by a transversal. A pair of alternate interior angles measures $(3x + 10)^\circ$ and $(5x - 30)^\circ$. What is x ?
 - A. 10
 - B. 20
 - C. 25

D. 40

7. The angles of a triangle are x° , $(2x + 15)^\circ$, and $(3x - 15)^\circ$. What is x ?

A. 25

B. 30

C. 35

D. 40

8. An isosceles triangle has two equal angles of 68° each. What is the third angle?

A. 34°

B. 44°

C. 54°

D. 68°

9. An equilateral triangle has a perimeter of 39 inches. What is the length of each side?

A. 9 in

B. 12 in

C. 13 in

D. 15 in

10. Two angles are supplementary. Their measures are $(4x + 8)^\circ$ and $(2x + 28)^\circ$. What is x ?

A. 20

B. 24

C. 26

D. 28

11. A triangle has an exterior angle of $(7x - 5)^\circ$. Its two remote interior angles are $(2x + 10)^\circ$ and $(3x + 15)^\circ$. What is x ?

A. 10

B. 12

C. 15

D. 20

12. Lines m and n are parallel. A transversal creates an angle of $(4x + 8)^\circ$ and a same-side interior angle of $(6x - 8)^\circ$. What is x ?

A. 12

B. 15

C. 18

D. 20

13. A triangle has side lengths 7, 10, and x . Which inequality describes all possible values of x ?

A. $3 < x < 17$

B. $x > 17$

C. $x < 3$

D. $7 < x < 10$

14. A triangle has two sides of lengths 8 and 13. If the third side is an integer, what is the greatest

possible length of the third side?

- A. 19
- B. 20
- C. 21
- D. 22

15. The angles of a triangle are in the ratio 2:3:4. What is the measure of the largest angle?

- A. 60°
- B. 70°
- C. 80°
- D. 90°

16. A regular polygon has each exterior angle equal to 24° . How many sides does the polygon have?

- A. 12
- B. 15
- C. 18
- D. 24

17. A triangle has an angle measuring $2x^\circ$, another measuring $(3x + 10)^\circ$, and an exterior angle at the third vertex measuring $(7x - 20)^\circ$. What is x ?

- A. 10
- B. 12
- C. 15
- D. 20

18. Two parallel lines are cut by a transversal. Consecutive interior angles are $(8x - 4)^\circ$ and $(5x + 19)^\circ$. What is the measure of the smaller angle?

- A. 64°
- B. 71°
- C. 109°
- D. 116°

19. In triangle ABC, angle A is twice angle B, and angle C is 20° greater than angle B. What is angle A?

- A. 60°
- B. 70°
- C. 80°
- D. 90°

20. A triangle has side lengths $2x + 1$, $x + 4$, and 17. If the triangle is isosceles and the side of length 17 is one of the equal sides, what is x ?

- A. 6
- B. 8
- C. 10
- D. 12

21. In triangle ABC, $AB = AC$. If angle B = $(4x + 2)^\circ$ and angle A = $(6x + 16)^\circ$, what is

x ? (Round to the nearest whole number)

- A. 8
- B. 10
- C. 11
- D. 14

22. Two lines intersect. The measures of two adjacent angles are $(3x + 15)^\circ$ and $(5x - 11)^\circ$. What is the measure of the larger angle?

- A. 72°
- B. 83°
- C. 99°
- D. 108°

23. A triangle has an area of 84 square units and a base of 12 units. What is its height?

- A. 7
- B. 12
- C. 14
- D. 16

24. A triangle has angles $(x + 10)^\circ$, $(2x - 5)^\circ$, and $(3x + 1)^\circ$. What is the measure of the largest angle? A. 54°

- B. 59°
- C. 64°
- D. 88°

25. A triangle has side lengths $3x - 2$, $2x + 1$, and $x + 7$. If its perimeter is 42, what is the length of the longest side?

- A. 13
- B. 14
- C. 15
- D. 16

Right Triangle Trigonometry

26. In a right triangle, the side opposite θ is 6 and the hypotenuse is 10. What is $\sin \theta$?
- A. 0.4
 - B. 0.6
 - C. 0.8
 - D. 1.6
27. In a right triangle, the side adjacent to θ is 8 and the hypotenuse is 10. What is $\cos \theta$?
- A. 0.6
 - B. 0.8
 - C. 1.25
 - D. 1.8
28. In a right triangle, the side opposite θ is 9 and the adjacent side is 12. What is $\tan \theta$?
- A. 0.67
 - B. 0.75
 - C. 1.33
 - D. 1.50
29. A right triangle has legs of length 5 and 12. What is the hypotenuse?
- A. 11
 - B. 12
 - C. 13
 - D. 17
30. A 13-foot ladder reaches 12 feet up a wall. How far is the base of the ladder from the wall?
- A. 3 ft
 - B. 5 ft
 - C. 7 ft
 - D. 10 ft
31. If $\sin \theta = 3/5$ and θ is acute, what is $\cos \theta$?
- A. $3/5$
 - B. $4/5$
 - C. $5/3$
 - D. $5/4$
32. If $\tan \theta = 7/24$ and θ is acute, what is $\sin \theta$?
- A. $7/25$
 - B. $7/24$
 - C. $24/25$

D. $24/7$

33. A right triangle has hypotenuse 20 and an acute angle of 30° . What is the length of the side opposite the 30° angle?

- A. 5
- B. 10
- C. $10\sqrt{3}$
- D. 20

34. A right triangle has hypotenuse 18 and an acute angle of 60° . What is the length of the side adjacent to the 60° angle?

- A. 9
- B. $9\sqrt{3}$
- C. $18\sqrt{3}$
- D. 12

35. A 20-foot ramp makes a 37° angle with the ground. Approximately how high does the ramp rise? ($\sin 37^\circ \approx 0.60$)

- A. 8 ft
- B. 10 ft
- C. 12 ft
- D. 16 ft

36. A right triangle has legs 9 and 40. If θ is opposite the side of length 9, what is $\tan \theta$?

- A. $9/40$
- B. $40/9$
- C. $9/41$
- D. $40/41$

37. If $\cos \theta = 5/13$ for an acute angle θ , what is $\tan \theta$?

- A. $5/12$
- B. $12/5$
- C. $5/13$
- D. $12/13$

38. A 25-foot guy wire is attached to the top of a pole and reaches the ground 7 feet from the base. Approximately how tall is the pole?

- A. 18 ft
- B. 24 ft
- C. 25 ft
- D. 32 ft

39. A right triangle has an acute angle θ such that $\tan \theta = 1$. What is θ ?

- A. 30°
- B. 45°
- C. 60°
- D. 90°

40. A 30-foot tree casts a shadow 17.3 feet long. What is the approximate angle of elevation of the sun? ($\tan 60^\circ \approx 1.73$)

- A. 30°
- B. 45°
- C. 60°
- D. 75°

41. A right triangle has side lengths x , $2x$, and $x\sqrt{5}$. If θ is opposite the side x , what is $\sin \theta$?

- A. $1/\sqrt{5}$
- B. $2/\sqrt{5}$
- C. $1/2$
- D. $\sqrt{5}/2$

42. A drone is 150 feet above the ground. The angle of depression from the drone to a point on the ground is 32° . Approximately how far is the point from the point directly below the drone? ($\tan 32^\circ \approx 0.625$)

- A. 94 ft
- B. 150 ft
- C. 240 ft
- D. 375 ft

43. From a point 40 meters from the base of a building, the angle of elevation to the top is 52° . Approximately how tall is the building? ($\tan 52^\circ \approx 1.28$)

- A. 31 m
- B. 40 m
- C. 51 m
- D. 64 m

44. A right triangle has hypotenuse 26 and one leg 10. If θ is opposite the leg of length 10, what is $\cos \theta$?

- A. $5/13$
- B. $10/26$
- C. $12/13$
- D. $25/26$

45. A 50-foot cable makes a 68° angle with the ground. Approximately how high does the cable reach? ($\sin 68^\circ \approx 0.93$)

- A. 34 ft
- B. 41 ft
- C. 46.5 ft
- D. 53.8 ft

46. In a right triangle, θ is acute and $\sin \theta = 0.72$. Which value is closest to $\cos \theta$?

- A. 0.28
- B. 0.51
- C. 0.69
- D. 0.92

47. A 24-meter ladder leans against a wall. The base is 9 meters from the wall. If θ is the angle between the ladder and the ground, which expression gives $\cos \theta$?

- A. $9/24$
- B. $\sqrt{495}/24$
- C. $24/9$
- D. $9/\sqrt{495}$

48. A right triangle has legs 11 and 60. Let θ be the angle opposite the side of length 11. Which is closest to θ ?

- A. 8°
- B. 10°
- C. 15°
- D. 20°

49. A 120-foot observation tower is viewed from a point on level ground. If the angle of elevation is 40° , approximately how far is the point from the base? ($\tan 40^\circ \approx 0.84$)

- A. 101 ft
- B. 143 ft
- C. 175 ft
- D. 286 ft

50. For an acute angle θ , $\sin \theta = 5/13$. If the hypotenuse is 39, what is the length of the side adjacent to θ ?

- A. 15
- B. 24
- C. 30
- D. 36

Similar Triangles

- 51.** Two triangles are similar. A side of length 6 in the first corresponds to a side of length 9 in the second. If another side in the first is 8, what is the corresponding side in the second?
- A. 10
 - B. 12
 - C. 14
 - D. 16
- 52.** Two similar triangles have corresponding sides in the ratio 2:5. If a side of the smaller triangle is 12, what is the corresponding side of the larger triangle?
- A. 20
 - B. 24
 - C. 30
 - D. 60
- 53.** Triangle ABC is similar to triangle DEF. If $AB = 10$, $BC = 14$, and $DE = 15$, what is EF?
- A. 18
 - B. 20
 - C. 21
 - D. 24
- 54.** A 6-foot person casts a 4-foot shadow. At the same time, a tree casts a 18-foot shadow. Assuming similar triangles, how tall is the tree?
- A. 24 ft
 - B. 27 ft
 - C. 30 ft
 - D. 36 ft
- 55.** Two similar triangles have perimeters 24 and 36. If a side of the smaller triangle is 10, what is the corresponding side of the larger triangle?
- A. 12
 - B. 15
 - C. 18
 - D. 20
- 56.** A small triangle has sides 5, 7, and 9. A similar triangle has a shortest side of 15. What is its longest side?
- A. 21
 - B. 24
 - C. 27
 - D. 30
- 57.** Triangles ABC and DEF are similar, with $A \leftrightarrow D$, $B \leftrightarrow E$, and $C \leftrightarrow F$. If $\angle A = 42^\circ$ and $\angle B = 68^\circ$, what is $\angle F$?
- A. 42°
 - B. 68°
 - C. 70°
 - D. 110°

- 58.** Two similar triangles have corresponding side lengths 12 and 18. If the area of the smaller triangle is 48, what is the area of the larger triangle?
- A. 72
 - B. 96
 - C. 108
 - D. 144
- 59.** A photograph is 8 inches wide and 12 inches tall. It is enlarged so that its width is 14 inches. What is the new height?
- A. 18 in
 - B. 19 in
 - C. 20 in
 - D. 21 in
- 60.** Two triangles are similar with scale factor 3 from smaller to larger. If the smaller triangle has area 20, what is the area of the larger triangle?
- A. 60
 - B. 90
 - C. 120
 - D. 180
- 61.** A 5-foot pole casts a 7-foot shadow. A nearby building casts a 42-foot shadow. How tall is the building?
- A. 25 ft
 - B. 30 ft
 - C. 35 ft
 - D. 40 ft
- 62.** Two similar triangles have side ratio 4:7. If the perimeter of the larger triangle is 63, what is the perimeter of the smaller?
- A. 28
 - B. 32
 - C. 36
 - D. 40
- 63.** A triangle has sides 8, 11, and 14. A similar triangle has perimeter 66. What is the length corresponding to side 11?
- A. 18
 - B. 20
 - C. 22
 - D. 24
- 64.** The scale factor from triangle PQR to triangle XYZ is $\frac{5}{2}$. If the area of PQR is 32, what is the area of XYZ?
- A. 80
 - B. 100
 - C. 160
 - D. 200
- 65.** A map uses a scale of 1 inch = 12 miles. Two towns are 3.75 inches apart on the map. How far apart are they?
- A. 30 mi
 - B. 40 mi

- C. 45 mi
- D. 48 mi

66. A 4-foot-tall sign casts a 6-foot shadow. A building casts a 39-foot shadow at the same time. What is the building's height?

- A. 24 ft
- B. 26 ft
- C. 28 ft
- D. 30 ft

67. Two similar triangles have corresponding heights 9 and 15. If the smaller triangle has base 12, what is the larger triangle's corresponding base?

- A. 18
- B. 20
- C. 24
- D. 30

68. Triangle ABC is similar to triangle DEF. $AB/DE = 3/5$. If the area of ABC is 27, what is the area of DEF?

- A. 45
- B. 60
- C. 75
- D. $125/3$

69. Two similar rectangles have widths 8 and 14. If the smaller rectangle has perimeter 40, what is the perimeter of the larger rectangle?

- A. 60
- B. 64
- C. 70
- D. 84

70. A triangular garden has sides 10, 14, and 18 meters. A similar garden has longest side 27 meters. What is the perimeter of the larger garden?

- A. 54
- B. 60
- C. 63
- D. 72

71. Two similar triangles have areas 81 and 144. If a corresponding side of the first is 12, what is the corresponding side of the second?

- A. 16
- B. 18
- C. 20
- D. 24

72. A model airplane has a wingspan of 18 inches and represents a real airplane with a wingspan of 45 feet. If the model's length is 12 inches, what is the real airplane's length?

- A. 20 ft
- B. 24 ft
- C. 30 ft
- D. 36 ft

73. Two similar triangles have side ratio 7:11. The difference between corresponding sides is 20. What is the

length of the smaller side?

- A. 28
- B. 30
- C. 35
- D. 40

74. A 1.5-meter vertical pole casts a 2-meter shadow. A tower casts a 28-meter shadow. What is the tower's height?

- A. 18 m
- B. 20 m
- C. 21 m
- D. 24 m

75. The sides of triangle A are 6, 10, and 14. Triangle B is similar and has area 75% greater than triangle A. What is the scale factor from A to B?

- A. 1.25
- B. $\sqrt{1.75}$
- C. 1.75
- D. 2.25

Rectangles

76. A rectangle has length 12 inches and width 5 inches. What is its area?

- A. 17 in^2
- B. 34 in^2
- C. 60 in^2
- D. 120 in^2

77. A rectangle has length 15 and width 7. What is its perimeter?

- A. 22
- B. 30
- C. 44
- D. 105

78. The area of a rectangle is 72 square feet and its width is 8 feet. What is its length?

- A. 8 ft
- B. 9 ft
- C. 10 ft
- D. 12 ft

79. A rectangle has perimeter 50 meters and length 15 meters. What is its width?

- A. 8 m
- B. 10 m
- C. 12 m
- D. 15 m

80. A rectangular garden is 18 feet by 12 feet. A path 1 foot wide surrounds the garden on all sides. What is the area of the path?

- A. 60 ft^2
- B. 64 ft^2
- C. 68 ft^2
- D. 72 ft^2

81. A rectangle has area 120 square centimeters. If its length is 15 cm, what is its diagonal?

- A. 15 cm
- B. 16 cm
- C. 17 cm
- D. 20 cm

82. A rectangle's length is 4 more than its width. Its perimeter is 40. What is its area?

- A. 80
- B. 96
- C. 100
- D. 104

83. A rectangle has diagonal 13 and width 5. What is its length?

- A. 8
- B. 10
- C. 12
- D. 18

84. The dimensions of a rectangle are increased by 20%. By what percent does its area increase?

- A. 20%
- B. 40%
- C. 44%
- D. 48%

85. A rectangular floor is 14 ft by 20 ft. Square tiles are 2 ft on each side. How many tiles are needed to cover the floor?

- A. 35
- B. 50
- C. 70
- D. 140

86. A rectangle has length $3x + 2$ and width $x - 1$. Its area is 70. If x is positive, what is x ? A. 3

- B. 4
- C. 5
- D. 6

87. A rectangle has area 96 and perimeter 40. What are its dimensions?

- A. 6 by 16
- B. 8 by 12
- C. 4 by 24
- D. 10 by 9.6

88. A rectangle is twice as long as it is wide. Its diagonal is $10\sqrt{5}$. What is its area?

- A. 100
- B. 150
- C. 200
- D. 250

89. A rectangular screen has width 24 inches and diagonal 30 inches. What is its height?

- A. 12 in
- B. 16 in
- C. 18 in
- D. 24 in

90. A rectangle's length is 3 times its width. If its area is 192, what is its perimeter?

- A. 40
- B. 48
- C. 56
- D. 64

- 91.** A rectangular lot has dimensions $(x + 5)$ meters and $(x - 2)$ meters. Its area is 84 square meters. What is x ? (Round to the nearest whole number)
- A. 8
 - B. 9
 - C. 10
 - D. 12
- 92.** A rectangle has perimeter 64. Its length is 6 greater than its width. What is its area?
- A. 247
 - B. 251
 - C. 265
 - D. 289
- 93.** A 10-by-16 rectangle is cut into two congruent rectangles by a line parallel to the shorter side. What is the perimeter of each smaller rectangle?
- A. 26
 - B. 32
 - C. 36
 - D. 42
- 94.** A rectangle has area 180. If both dimensions are multiplied by $\frac{3}{2}$, what is the new area?
- A. 270
 - B. 360
 - C. 405
 - D. 450
- 95.** The diagonal of a rectangle is 25, and one side is 7. What is the rectangle's area?
- A. 168
 - B. 336
 - C. 420
 - D. 600
- 96.** A rectangular pool is 30 ft by 18 ft. A border of uniform width x surrounds the pool, making the total outer dimensions 34 ft by 22 ft. What is x ?
- A. 1 ft
 - B. 2 ft
 - C. 3 ft
 - D. 4 ft
- 97.** A rectangle has side lengths x and y . If $x + y = 25$ and $xy = 144$, what is the length of the longer side?
- A. 9
 - B. 12
 - C. 13
 - D. 16
- 98.** A rectangle is enlarged so that each side is multiplied by k . Its area changes from 72 to 162. What is

k?

- A. 1.25
- B. 1.5
- C. 2
- D. 2.25

99. A rectangular piece of land has area 600 square meters. Its length is 10 meters more than its width. What is the perimeter?

- A. 80 m
- B. 90 m
- C. 100 m
- D. 120 m

ANSWER KEY

Answers are listed by question number.

1. A	26. B	51. B	76. C
2. C	27. B	52. C	77. C
3. A	28. B	53. C	78. B
4. B	29. C	54. B	79. B
5. B	30. B	55. B	80. B
6. B	31. B	56. C	81. C
7. B	32. A	57. C	82. B
8. B	33. B	58. C	83. C
9. C	34. A	59. D	84. C
10. B	35. C	60. D	85. C
11. C	36. A	61. B	86. C
12. C	37. B	62. C	87. B
13. A	38. B	63. C	88. C
14. B	39. B	64. D	89. C
15. C	40. C	65. C	90. D
16. B	41. A	66. B	91. A
17. C	42. C	67. B	92. A
18. C	43. C	68. B	93. C
19. C	44. C	69. C	94. C
20. B	45. C	70. C	95. A
21. C	46. C	71. A	96. B
22. C	47. A	72. C	97. D
23. C	48. B	73. C	98. B
24. D	49. B	74. C	99. C
25. D	50. D	75. B	

Suggested use: Complete the worksheet without looking at the answer key. Then mark missed questions by topic so you can target review.