C7

Geometry

CHAPTER ASSIGNMENT · 20 MARKS

Name _____ Class _____ No. _____ Date _____

Answer every question in the space given. You may use your calculator and the GED® formula sheet (on the Start here tab of the chapter page). Use π ≈ 3.14 unless a question asks for an answer in terms of π. Show your working and give units.

Practice questions from *GED® Test Prep Mathematics*, Chapter 7 (Geometry), for classroom use. Questions that used a picture in the book give its numbers in words; where a picture's numbers could not be put into words, the questions are Guru Jazzy's own in the same style. The Check yourself and Chapter quiz questions are Guru Jazzy's own.

Lesson 1 · Plane figures

1.A Name the four-sided figures (rectangle, square, parallelogram, rhombus, trapezoid) that can have each property. Write *None* if no four-sided figure has it.

Property	Figures	Property	Figures
four right angles		opposite angles are equal	
opposite sides are equal in length		all four sides are equal in length	
exactly one pair of parallel sides		sum of the inside angles is 360°	
all angles are equal		sides all of different lengths	
only three right angles		four equal angles and four equal sides	

1.B Figure *EFGH* is a trapezoid with *EF* on top and *GH* on the bottom. The angles at *E* and *G* are right angles. ∠F is 20° more than three times ∠H. What is the measure of ∠F?

A	B	C	D
40°	120°	140°	180°

1.C For figure *EFGH* above to be a trapezoid, which statement must be true?

A	B	C	D
EF is the same length as *FH*.	*EF* is parallel to *GH*.	m∠F = m∠H	m∠G = m∠F

1.D In figure *RSUT* every side is 5 cm, the opposite sides are parallel, and the angles at *T* and *U* are right angles. What is the measure of ∠R?

A	B	C	D
5°	20°	90°	270°

1.E A four-sided figure has sides measuring 10, 15, 10 and 15. The opposite angles are equal, but there are no right angles. What is the figure?

A	B	C	D
rhombus	rectangle	parallelogram	trapezoid

Lesson 2 · Triangles

2.A Classify each triangle in two ways: by its sides and by its angles.

Triangle	By sides	By angles
sides 6 cm, 6 cm and 6 cm		
angles 90°, 45° and 45°		
angles 120°, 35° and 25°		

2.B Find the unknown angle in each triangle.

Triangle	Unknown angle
two angles are 40° and 75°	
a right triangle with one angle of 28°	
an isosceles triangle whose top angle is 50° (find each base angle)	

2.C In figure *ABCD*, the diagonal *AC* splits it into triangles *ABC* and *ACD*. *AB* = 14 cm and *AD* = 8 cm. ∠DAC = 55° and ∠DCA = 35°. If ∠DAB measures 115° and ∠DCB measures 95°, how long is side *AC*? (*Hint:* first find ∠BAC and ∠BCA.)

A	B	C	D
6 cm	8 cm	14 cm	22 cm

2.D In the same figure, what kind of triangle is ΔACD?

A	B	C	D
isosceles	acute	right	obtuse

2.E One angle in a scalene triangle measures 38°, and another measures 56°. What is the third angle?

A	B	C	D
38°	56°	86°	124°

Lesson 3 · Pythagorean relationship

3.A Two sides of a right triangle are given. Find the third side to the nearest tenth. You may use a calculator.

Leg a	Leg b	Hypotenuse c	Leg a	Leg b	Hypotenuse c
8 in	8 in		6 mm		10 mm
9 yd	12 yd			5 ft	18 ft
1.5 cm	2 cm		7 cm	10 cm	
	3 m	6 m	15 in		30 in
4 km	5 km		5 ft	12 ft	

3.B The two shorter sides of a right triangle measure 18 ft and 24 ft. What is the length of the third side, in feet?

A	B	C	D
25	28	30	42

3.C Jan has built a rectangular wooden frame 11 ft long and 5 ft wide. He adds a brace along its diagonal. How long is the brace, to the nearest tenth of a foot?

A	B	C	D
16.0	13.7	12.8	12.1

3.D The hypotenuse of a right triangle measures 39 inches. If one leg measures 15 inches, what is the other leg, in inches?

A	B	C	D
36	24	18	12

Lesson 4 · Perimeter and area

4.A Find the area and perimeter of each figure.

Figure	Area	Perimeter
a parallelogram: base 8, height 3.7, slanted side 4.3		
a trapezoid: parallel sides 14 and 42, height 22, slanted sides 29 and 24		
a parallelogram: base 4, height 9.5, slanted side 12		

4.B A rectangle is 11 inches wide and 8 inches tall. A slanted line splits it into two parts. The shaded part is a trapezoid whose parallel sides are 5 in (along the top) and 9 in (along the bottom), 8 in apart. What is the area of the shaded part, in square inches?

A	B	C	D
38	40	56	88

4.C The four sides of a rectangle measure 9 feet, 6 feet, 9 feet and 6 feet. What is its area in square feet?

A	B	C	D
30	36	54	81

4.D Martin's rectangular yard is 24 ft long and 18 ft wide. He builds a rectangular patio 12 ft by 9 ft on one side of it, and the rest is grass. How many square feet of grass are there?

A	B	C	D
108	162	324	432

4.E A square measures 6 centimeters on a side. What is its perimeter in centimeters?

A	B	C	D
12	24	36	216

Lesson 5 · Circles

5.A Find the circumference and area of each circle. Round to the nearest tenth.

Circle	Circumference	Area
radius 2 cm		
radius 4 m		
diameter 9 in		

5.B A round fountain has a diameter of 12 ft. Workers lay a tile border around its edge. How long is the border, to the nearest foot?

A	B	C	D
19	36	38	57

5.C Which expression gives the area of the bottom of the same fountain?

A	B	C	D
3.14×6	3.14×6^2	3.14×12	3.14×12^2

5.D The radius of a circle is 6.5 cm. What is its diameter in centimeters?

A	B	C	D
3.25	13.0	33.16625	132.665

5.E A target has a 25-point inner circle with a diameter of 2 inches. Around it are a 10-point band and then a 5-point band, each 2 inches wide. To the nearest inch, what is the outer circumference of the 10-point band?

A	B	C	D
6	13	19	113

Lesson 6 · Volume

6.A Find the volume of each object to the nearest whole unit.

Object	Volume
a cube with edges of 1.5 ft	
a cylinder with radius 5 in and height 3 in	
a cone with radius 5 cm and height 12 cm	
a square pyramid with base 12 m by 12 m and height 10 m	

6.B A rectangular box with a volume of 80 cubic feet is 4 ft long and 4 ft wide. What is its height, in feet?

A	B	C	D
5	10	16	20

6.C A wooden crate measures 5 feet along each edge. What is its volume in cubic feet?

A	B	C	D
15	25	125	150

6.D Linda's round paddling pool is 12 ft across and 3 ft deep. She adds one scoop of water stabilizer for every 20 cubic feet of water. About how many scoops should she add?

A	B	C	D
3	6	17	36

6.E A pyramid-shaped package has a square base 10 cm by 10 cm and a height of 15 cm. The maker increases both the length and the width of the base by 4 cm. How many more cubic centimeters will the new package hold?

A	B	C	D
480	500	980	2,940

6.F The height of a cone is half the diameter of its base. If the cone is 4 inches tall, what is its volume to the nearest cubic inch?

A	B	C	D
21	48	67	268

Lesson 7 · Surface area

7.A All the edges of a metal box are the same length. If its surface area is 150 square inches, how long is each edge, in inches?

A	B	C	D
5	6	25	50

7.B Figure A is a cube with edges of 5. Figure B is a box 10 long, 3 wide and 3 tall (same units). Which statement is true?

A	B	C	D
Their surface areas are equal.	A's surface area is half of B's.	A's surface area is greater than B's.	Their surface areas add up to more than 300.

7.C The diameter of a sphere is 8. How many square units is its surface area?

A	B	C	D
16π	64π	256π	512π

7.D A cone has a slant height of 8 inches and a base diameter of 8 inches. If the slant height is doubled and the diameter is halved, which statement must be true?

A	B	C	D
The new cone has the same surface area.	The new surface area is exactly half the old one.	The new surface area is exactly double the old one.	The new surface area is less than the old one.

7.E A cylinder's base has a diameter of 6 inches, and its height is equal to that diameter. What is its surface area, to the nearest square inch?

A	B	C	D
57	113	170	339

Lesson 8 · Combined figures

8.A A figure is a rectangle 12 cm long and 10 cm wide with a half circle on one of its 10 cm sides. Find its area and its perimeter. [2]

8.B A concrete slab 8 ft wide, 12 ft long and 3 ft thick has a block 3 ft by 3 ft by 2 ft on each of its four corners. What is the volume of the whole structure, in cubic feet?

A	B	C	D
72	168	288	360

8.C A candy package is a cylinder with an identical cone on each end. The cylinder is 8 in long with a radius of 2 in, and the whole package is 16 in long. What is its capacity, to the nearest cubic inch?

A	B	C	D
33	100	134	201

Lesson 9 · Geometry calculator skills

9.A Use your calculator to evaluate each formula.

Problem	Answer
Perimeter of a rectangle 16 in long and 5 in wide	
Area of a triangle with base 26 cm and height 15 cm	
Volume of a cube with 3.5 ft edges (nearest cubic foot)	
Hypotenuse when the legs are 13 cm and 9 cm (nearest tenth)	
Circumference of a circle with diameter 12 in (nearest tenth)	
Volume of a cone with radius 12 cm and height 20 cm (nearest cm^3)	

9.B Paul cuts a shape from plywood: a rectangle 32 in wide and 20 in tall with a triangle cut out of its bottom edge. The triangle's base is 20 in and its height is 12 in. What is the area of the piece, in square inches?

A	B	C	D
400	480	520	640

9.C To the nearest cubic meter, what is the volume of a cylinder with a radius of 1.5 meters and a height of 5 meters?

A	B	C	D
25	35	45	141

Chapter practice questions

P1 What is the surface area, in square centimeters, of a cylinder with a height of 10 cm and a radius of 6 cm?

A	B	C	D
136π	160π	192π	256π

P2 A pyramid has a square base. Every edge of the pyramid is 4, so each side face is an equilateral triangle with an area of $4\sqrt{3}$. What is the total surface area of the pyramid?

A	B	C	D
$8\sqrt{3}$	$8\sqrt{3} + 16$	$16\sqrt{3} + 16$	$64\sqrt{3}$

P3 A toy factory paints its rubber balls with 2 coats of latex. A ball has a circumference of 16π cm. How many square centimeters of latex coating does one ball need, counting both coats?

A	B	C	D
64π	128π	256π	512π

P4 An ice cream cone has a radius of 3 and a slant height of 10. A sphere of ice cream with radius 3 sits in it, with exactly half of the sphere above the rim. What is the surface area of the whole treat that you can see?

A	B	C	D
24π	30π	48π	60π

P5 A parallelogram has a base of 6 cm and a height of 10 cm. It has the same area as a triangle with a height of 5 cm. What is the base of the triangle, in centimeters? [1]

P6 Three identical boxes are stacked. Each is 18 in long, the width is half the length, and the total height of the stack equals the width of one box. What is the combined volume of all three boxes, in cubic inches?

A	B	C	D
1458	1800	2124	3136

P7 Max hikes 300 yards due north of his campsite, then 400 yards due east. How many yards would he have to hike to go straight back to his campsite?

A	B	C	D
400	500	600	700

P8 In a right triangle the hypotenuse is 15 inches and one leg is 6 inches. Which equation could be used to find the other leg, x?

A	B	C	D
$x = \sqrt{(15 - 6)}$	$x = 15 - 6$	$x^2 = 15^2 + 6^2$	$x^2 = 15^2 - 6^2$

P9 The length of a rectangle is three times its width. If the perimeter is 96 inches, what is the length, in inches?

A	B	C	D
12	24	36	48

P10 A circle with a radius of 2 inches fits inside a square, touching each side. What is the approximate area, in square inches, of the part of the square outside the circle?

A	B	C	D
3.43	12.57	16.00	28.57

P11 A classroom is 40 feet long and 25 feet wide, and the ceiling is 12 feet high. Use this for (a) and (b).

(a) What is the total area of the four walls, in square feet? Ignore windows and doors. [1]

A	B	C	D
1200	1560	1920	4000

(b) What is the volume of the room, in cubic feet? [1]

A	B	C	D
1000	3120	12000	15625

P12 Laura paints three model square pyramids, including their bases: base 2 in with slant height 3 in, base 3 in with slant height 6 in, and base 4 in with slant height 4 in. One tube of paint covers 30 square inches. About how many tubes does she need?

A	B	C	D
4	16	48	109

Check yourself

1 One angle of a parallelogram measures 65°. Find the other three angles and explain how you know. [3]

2 A TV screen is 32 inches wide and 18 inches tall. How long is its diagonal, to the nearest inch? Show your working. [2]

3 A round garden has a diameter of 14 ft. How much fencing goes around it, and what area needs mulch? Use $\pi \approx 3.14$. [3]

4 Find the volume of a square pyramid with a base 9 cm by 9 cm and a height of 10 cm. How does it compare with a box that has the same base and height? [2]

5 Sketch and label a rectangle 14 m by 10 m with a 6 m by 4 m rectangle cut out of one corner. Find the perimeter and the area of the shape that is left. [3]

6 A can has a radius of 3 in and a height of 5 in. Find its volume, and the area of a paper label that covers only its curved side. [2]

Chapter quiz

Q1 A four-sided figure has exactly one pair of parallel sides. What is it?

A	B	C	D
Rectangle	Trapezoid	Parallelogram	Square

Q2 Two angles of a triangle measure 55° and 100°. What is the third angle?

A	B	C	D
45°	35°	25°	155°

Q3 A right triangle has legs of 6 cm and 8 cm. How long is the hypotenuse?

A	B	C	D
10 cm	14 cm	48 cm	7 cm

Q4 A 13-foot ladder leans on a wall with its foot 5 feet from the wall. How high does it reach?

A	B	C	D
8 ft	18 ft	14 ft	12 ft

Q5 A rectangle is 16 inches long and 9 inches wide. What is its perimeter?

A	B	C	D
25 in	144 in	50 in	34 in

Q6 A triangle has a base of 10 m and a height of 6 m. What is its area?

A	B	C	D
16 m^2	30 m^2	60 m^2	32 m^2

Q7 Using $\pi \approx 3.14$, what is the circumference of a circle with a radius of 5 cm?

A	B	C	D
15.7 cm	78.5 cm	62.8 cm	31.4 cm

Q8 Using $\pi \approx 3.14$, what is the area of a circle with a radius of 4 m?

A	B	C	D
50.24 m^2	12.56 m^2	25.12 m^2	100.48 m^2

Q9 A box is 5 ft long, 4 ft wide and 3 ft tall. What is its volume?

A	B	C	D
12 ft^3	47 ft^3	60 ft^3	94 ft^3

Q10 A cone and a cylinder have the same base and height. How much does the cone hold?

A	B	C	D
Half as much	One-third as much	The same amount	Twice as much

Q11 A cube has edges of 3 inches. What is its surface area?

A	B	C	D
27 in²	9 in²	36 in²	54 in²

Q12 An L-shaped floor is a 10 ft by 6 ft rectangle joined to a 4 ft by 3 ft one. What is its area?

A	B	C	D
72 ft²	60 ft²	23 ft²	12 ft²

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/ged-mathematics/chapter-7-geometry/