Algebra 1 & Geometry

Word Problem Worksheet — Self-Study Edition

PART 1 — Algebra 1

Q01

[KEY: let x = unknown → write equation → solve]

Emma earns $12 per hour babysitting. She wants to buy a jacket that costs $78. She already has $18 saved. How many hours does she need to work?

A) 4 hours

B) 5 hours

C) 6 hours

D) 7 hours

Q02

[KEY: rate x time = distance → opposite directions → ADD speeds]

Two cars leave the same point traveling in opposite directions. Car A goes 55 mph and Car B goes 45 mph. After how many hours will they be 250 miles apart?

A) 2 hours

B) 2.25 hours

C) 2.5 hours

D) 3 hours

Q03

[KEY: inequality → round UP for 'minimum whole number']

A roller coaster requires riders to be at least 48 inches tall. Marcus is currently 41 inches tall and grows about 2.5 inches per year. What is the minimum number of whole years he must wait?

A) 3 years

B) 2 years

C) 4 years

D) 2.8 years

Q04

[KEY: system of equations → eliminate one variable]

A theater sells adult tickets for $9 and child tickets for $5. One evening, 200 tickets were sold for a total of $1,220. How many adult tickets were sold?

A) 50 adult tickets

B) 80 adult tickets

C) 110 adult tickets

D) 55 adult tickets

Q05

[KEY: linear model y = start - rate x time]

A candle is 10 inches tall when lit. After 3 hours, it is 7 inches tall. If the candle burns at a constant rate, what is its height after 8 hours?

A) 1 inch

B) 2 inches

C) 3 inches

D) 0 inches

Q06

[KEY: percent changes MULTIPLY, not add: x1.40 then x0.75]

A store marks up all items by 40%. A customer uses a coupon for 25% off the marked-up price. If the original cost is $80, what is the final price?

A) $80.00

B) $84.00

C) $92.00

D) $70.00

Q07

[KEY: mixture → amount x concentration + amount x concentration = total]

How many liters of a 60% acid solution must be mixed with 10 liters of a 30% acid solution to produce a 50% acid solution?

A) 20 liters

B) 15 liters

C) 25 liters

D) 30 liters

Q08

[KEY: consecutive odd integers = n, n+2, n+4]

The sum of three consecutive odd integers is 81. What is the LARGEST of the three integers?

A) 27

B) 29

C) 25

D) 31

Q09

[KEY: direct variation y = kx → find k first, then solve]

The number of pages Sofia reads varies directly with the number of hours she reads. She reads 84 pages in 3 hours. How many pages will she read in 5.5 hours?

A) 140 pages

B) 150 pages

C) 154 pages

D) 160 pages

Q10

[KEY: inclusive = endpoints ARE included]

A theme park offers a Family Deal for groups between 4 and 8 people inclusive. Tickets cost $24 each. What is the range of total costs for the Family Deal?

A) $96 to $192

B) $96 to $200

C) $100 to $192

D) $72 to $216

PART 2 — Geometry

Q11

[KEY: Pythagorean theorem a^2 + b^2 = c^2 (c = hypotenuse, always longest)]

A ladder leans against a wall. The base is 6 feet from the wall and reaches 8 feet up the wall. How long is the ladder?

A) 12 feet

B) 11 feet

C) 10 feet

D) 14 feet

Q12

[KEY: area of circle = pi x r^2; radius = diameter / 2]

A circular garden has a diameter of 14 meters. What is the area of the garden? (Use pi = 3.14)

A) 615.44 m^2

B) 153.86 m^2

C) 43.96 m^2

D) 87.92 m^2

Q13

[KEY: exterior angle = sum of 2 non-adjacent interior angles]

In triangle ABC, angle A = 35 degrees and angle B = 78 degrees. What is the measure of the exterior angle at vertex C?

A) 67 degrees

B) 180 degrees

C) 103 degrees

D) 113 degrees

Q14

[KEY: similar triangles → matching sides are proportional]

A 6-foot person casts a 4-foot shadow. At the same time, a flagpole casts a 20-foot shadow. How tall is the flagpole?

A) 30 feet

B) 13.3 feet

C) 24 feet

D) 48 feet

Q15

[KEY: area of trapezoid = (1/2)(b1 + b2) x h]

A trapezoidal field has two parallel sides of 30 m and 50 m, and a perpendicular height of 20 m. What is the area of the field?

A) 1,600 m^2

B) 600 m^2

C) 800 m^2

D) 1,000 m^2

Q16

[KEY: volume of cylinder = pi x r^2 x h]

A cylindrical water tank has a radius of 5 feet and a height of 12 feet. How much water can it hold? (Use pi = 3.14)

A) 942 ft^3

B) 471 ft^3

C) 3,768 ft^3

D) 1,884 ft^3

Q17

[KEY: supplementary = 180 degrees total; complementary = 90 degrees total]

Two angles are supplementary. One angle is three times the other. What is the measure of the LARGER angle?

A) 135 degrees

B) 90 degrees

C) 120 degrees

D) 45 degrees

Q18

[KEY: fence x meters away = add 2x to EACH dimension]

A rectangular pool is 25 m long and 10 m wide. A fence is built 3 meters away from each side. What is the perimeter of the fenced area?

A) 70 m

B) 94 m

C) 90 m

D) 124 m

Q19

[KEY: sector area = (angle / 360) x pi x r^2]

A pizza slice is a sector with diameter 16 inches and central angle 45 degrees. What is the area of the slice? (Use pi = 3.14)

A) 100.48 in^2

B) 25.12 in^2

C) 50.24 in^2

D) 12.56 in^2

Q20

[KEY: scale factor k → area scales by k^2 (SQUARE it!)]

Two similar rectangles have a scale factor of 1:3. The small rectangle has area 8 cm^2. What is the area of the large rectangle?

A) 24 cm^2

B) 72 cm^2

C) 48 cm^2

D) 27 cm^2

ANSWER KEY

Q01: **B**	Q02: **C**	Q03: **A**	Q04: **D**	Q05: **B**
Q06: **B**	Q07: **A**	Q08: **B**	Q09: **C**	Q10: **A**
Q11: **C**	Q12: **B**	Q13: **D**	Q14: **A**	Q15: **C**
Q16: **A**	Q17: **A**	Q18: **B**	Q19: **B**	Q20: **B**