SELF-STUDY WORKSHEET

Pre-Algebra & Geometry

Word Problems — 20 Questions

Name: _____ Date: _____ Score: _____ / 20

Part A — Pre-Algebra

Q1.
A store sells apples for $0.75 each and oranges for $1.20 each. Jake buys 4 apples and 3 oranges. How much does he spend in total?

Example: Example: 2 apples @ $1 and 3 oranges @ $2 => 2x1 + 3x2 = $8

KEY WORDS: TOTAL = multiply EACH item, then ADD them together.

A) $6.00
B) $6.60
C) $5.85
D) $7.20

Q2.
A number is multiplied by 6, then 9 is subtracted. The result is 33. What is the number?

Example: Example: 'multiplied by 6 then subtract 9' => write: 6x - 9 = 33

KEY WORDS: READ ORDER: write the equation exactly as stated. 6x - 9 = 33

A) 7
B) 8
C) 6
D) 5

Q3.
Maria earns $12 per hour. She worked Monday through Friday, 7 hours each day. How much did she earn for the whole week?

Example: Example: 3 days x 5 hrs x $10/hr = $150

KEY WORDS: RATE x TIME = pay. Mon-Fri = 5 days (count carefully!).

A) $420
B) $504
C) $480
D) $360

Q4.
The sum of three consecutive even numbers is 78. What is the largest of the three numbers?

Example: Example: Let n, n+2, n+4 => sum=36 => 3n+6=36 => n=10 => largest=14

KEY WORDS: CONSECUTIVE EVEN: gap is +2 each. Use n, n+2, n+4.

A) 28
B) 26
C) 24
D) 30

Q5.
A bag has red and blue marbles. There are 5 times as many red marbles as blue. If there are 48 marbles total, how many are red?

Example: Example: total=24 => blue=b, red=5b => 6b=24 => b=4 => red=20

KEY WORDS: '5 times as many' => red = 5 x blue. Total = 5b + b = 6b.

A) 40
B) 35
C) 45
D) 30

Q6.
A recipe needs 2.5 cups of flour for every 12 cookies. How many cups are needed for 60 cookies?

Example: Example: scale factor = 60 / 12 = 5 => multiply flour by 5

KEY WORDS: PROPORTION: find the scale factor first, then multiply.

A) 12.5 cups
B) 10 cups
C) 15 cups
D) 12 cups

Q7.
Tom scored 85, 92, 78, and 89 on four tests. What score does he need on his 5th test to have an average of 88?

Example: Example: Target sum = 88 x 5 = 440. Subtract what you already have.

KEY WORDS: TARGET SUM = average x total count. Subtract the known total.

A) 96
B) 94
C) 98
D) 92

Q8.
A shirt originally costs $45. It is on sale for 30% off. What is the sale price?

Example: Example: $50 at 20% off => $50 x 0.80 = $40

KEY WORDS: DISCOUNT: 30% off means you PAY 70%. Multiply original by 0.70.

A) $31.50
B) $13.50
C) $33.50
D) $28.50

Q9.
A train travels at 60 miles per hour. How long does it take to travel 210 miles?

Example: Example: 120 miles at 40 mph => t = 120 / 40 = 3 hours

KEY WORDS: d = r x t => t = d / r. Time = Distance divided by Rate.

A) 3.5 hours

B) 3 hours

C) 4 hours

D) 2.5 hours

Q10.

The price of a video game increased from $40 to $52. What is the percent increase?

Example: Example: $20 to $25 => (25-20)/20 x 100 = 25%

KEY WORDS: % CHANGE = (change / ORIGINAL) x 100. Always divide by the OLD value.

A) 30%

B) 25%

C) 20%

D) 35%

Part B — Geometry

Q11.

A rectangular garden is 14 m long and 9 m wide. How many meters of fencing are needed to go all the way around it?

Example: Example: l=8, w=5 => P = 2(8+5) = 26 m

KEY WORDS: PERIMETER of rectangle = 2 x (length + width).

A) 46 m

B) 126 m

C) 23 m

D) 52 m

Q12.

A triangle has a base of 10 cm and a height of 7 cm. What is its area?

Example: Example: b=6, h=4 => A = (1/2) x 6 x 4 = 12 sq cm

KEY WORDS: TRIANGLE AREA = (1/2) x base x height. Don't forget the HALF!

A) 35 sq cm

B) 70 sq cm

C) 17 sq cm

D) 30 sq cm

Q13.

A circular pizza has a radius of 8 inches. What is the area of the pizza? (Use pi = 3.14)

Example: Example: r=5 => A = 3.14 x 25 = 78.5 sq in

KEY WORDS: CIRCLE AREA = pi x r squared. Square the radius FIRST, then multiply by pi.

A) 200.96 sq in

B) 50.24 sq in

C) 25.12 sq in

D) 401.92 sq in

Q14.

A right triangle has legs of 6 cm and 8 cm. What is the length of the hypotenuse?

Example: Example: 3^2 + 4^2 = 9+16 = 25 => c = 5 (Pythagorean triple!)

KEY WORDS: PYTHAGOREAN THEOREM: a^2 + b^2 = c^2. Hypotenuse = longest side.

A) 10 cm
B) 14 cm
C) 12 cm
D) 7 cm

Q15.

Two angles of a triangle are 47 degrees and 68 degrees. What is the third angle?

Example: Example: 50 + 70 + ? = 180 => ? = 60 degrees

KEY WORDS: TRIANGLE ANGLES always add up to 180 degrees. Subtract the two known angles.

A) 65 deg
B) 55 deg
C) 75 deg
D) 45 deg

Q16.

A rectangular room is 12 ft by 15 ft. Tiles cost $3.50 per square foot. How much to tile the entire floor?

Example: Example: 10x8 ft at $2/sq ft => 80 x $2 = $160

KEY WORDS: Find AREA first (l x w), THEN multiply by the cost per unit.

A) $630
B) $472.50
C) $189
D) $315

Q17.

A cylindrical can has a radius of 3 cm and a height of 10 cm. What is its volume? (Use pi = 3.14)

Example: Example: r=2, h=5 => V = 3.14 x 4 x 5 = 62.8 cu cm

KEY WORDS: CYLINDER VOLUME = pi x r^2 x h. Find circle area (pi r^2) first, then multiply by height.

A) 282.6 cu cm
B) 94.2 cu cm
C) 188.4 cu cm
D) 565.2 cu cm

Q18.

Two parallel lines are cut by a transversal. One angle measures 115 degrees. What is the alternate interior angle?

Example: Example: If one alternate interior angle is 70 deg, the other is also 70 deg.

KEY WORDS: ALTERNATE INTERIOR angles = EQUAL. Co-interior (same side) = add to 180.

A) 115 deg
B) 65 deg
C) 75 deg
D) 180 deg

Q19.

A rectangular box is 5 cm long, 4 cm wide, and 3 cm tall. What is its surface area?

Example: Example: l=2,w=3,h=4 => SA = 2(6+8+12) = 2(26) = 52 sq cm

KEY WORDS: SURFACE AREA = 2(lw + lh + wh). Three pairs of faces. Don't forget x2!

A) 94 sq cm

B) 60 sq cm

C) 47 sq cm

D) 120 sq cm

Q20.

Point A is at (1, 2) and point B is at (7, 10) on a coordinate plane. What is the distance between them?

Example: Example: (0,0) to (3,4) => sqrt(9+16) = sqrt(25) = 5

KEY WORDS: DISTANCE = sqrt((x2-x1)^2 + (y2-y1)^2). It's Pythagorean theorem on a grid!

A) 10 units

B) 8 units

C) 14 units

D) 12 units

SELF-STUDY WORKSHEET

Answer Key & Explanations

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
Q1	**B**	Q2	**A**	Q3	**A**	Q4	**A**	Q5	**A**
Q6	**A**	Q7	**A**	Q8	**A**	Q9	**A**	Q10	**A**
Q11	**A**	Q12	**A**	Q13	**A**	Q14	**A**	Q15	**A**
Q16	**A**	Q17	**A**	Q18	**A**	Q19	**A**	Q20	**A**

Detailed Explanations

Q1 [B] A store sells apples for $0.75 each and oranges for $1.20 each. Jake buys 4 appl...
4 x $0.75 = $3.00 | 3 x $1.20 = $3.60 | Total = $6.60

Q2 [A] A number is multiplied by 6, then 9 is subtracted. The result is 33. What is the...
6x - 9 = 33 => 6x = 42 => x = 7

Q3 [A] Maria earns $12 per hour. She worked Monday through Friday, 7 hours each day. Ho...
5 days x 7 hrs = 35 hrs | 35 x $12 = $420

Q4 [A] The sum of three consecutive even numbers is 78. What is the largest of the thre...
n+(n+2)+(n+4)=78 => 3n+6=78 => n=24 => largest=28

Q5 [A] A bag has red and blue marbles. There are 5 times as many red marbles as blue. I...
6b=48 => b=8 | red = 5 x 8 = 40

Q6 [A] A recipe needs 2.5 cups of flour for every 12 cookies. How many cups are needed ...
60 / 12 = 5 | 2.5 x 5 = 12.5 cups

Q7 [A] Tom scored 85, 92, 78, and 89 on four tests. What score does he need on his 5th ...
Target=440 | Known=85+92+78+89=344 | Needed=440-344=96

Q8 [A] A shirt originally costs $45. It is on sale for 30% off. What is the sale price?
45 x 0.70 = $31.50 (or 45 - 45x0.30 = 45 - 13.50 = $31.50)

Q9 [A] A train travels at 60 miles per hour. How long does it take to travel 210 miles?
t = 210 / 60 = 3.5 hours

Q10 [A] The price of a video game increased from $40 to $52. What is the percent increas...
(52-40)/40 x 100 = 12/40 x 100 = 30%

Q11 [A] A rectangular garden is 14 m long and 9 m wide. How many meters of fencing are n...
P = 2(14+9) = 2 x 23 = 46 m

Q12 [A] A triangle has a base of 10 cm and a height of 7 cm. What is its area?
A = 1/2 x 10 x 7 = 5 x 7 = 35 sq cm

Q13 [A] A circular pizza has a radius of 8 inches. What is the area of the pizza? (Use p...
A = 3.14 x 8^2 = 3.14 x 64 = 200.96 sq in

Q14 [A] A right triangle has legs of 6 cm and 8 cm. What is the length of the hypotenuse...
c^2 = 6^2 + 8^2 = 36+64 = 100 => c = 10 cm

Q15 [A] Two angles of a triangle are 47 degrees and 68 degrees. What is the third angle?
180 - 47 - 68 = 65 degrees

Q16 [A] A rectangular room is 12 ft by 15 ft. Tiles cost $3.50 per square foot. How much...
Area = 12 x 15 = 180 sq ft | Cost = 180 x $3.50 = $630

Q17 [A] A cylindrical can has a radius of 3 cm and a height of 10 cm. What is its volume...
V = 3.14 x 3^2 x 10 = 3.14 x 9 x 10 = 282.6 cu cm

Q18 [A] Two parallel lines are cut by a transversal. One angle measures 115 degrees. Wha...
Alternate interior angles are EQUAL => 115 degrees

Q19 [A] A rectangular box is 5 cm long, 4 cm wide, and 3 cm tall. What is its surface ar...
SA = 2(5x4 + 5x3 + 4x3) = 2(20+15+12) = 2x47 = 94 sq cm

Q20 [A] Point A is at (1, 2) and point B is at (7, 10) on a coordinate plane. What is th...
dx=6, dy=8 => sqrt(36+64) = sqrt(100) = 10 units

— All answer choices are A) for this worksheet — see website version for full multiple choice interaction —