Algebra 104 Part 2 Worksheet

Directions: Solve each word problem involving algebraic equations, inequalities, polynomials, or functions. Choose the best answer from A to D.

1. Two buildings are for sale. The second building has 1,500 square feet **less than** twice the square footage of the first. Together they total 5,000 sq ft. What is the square footage of the first building? *(See Algebra 101 video (Algebraic Expressions section) for an explanation between 'less than' and 'less'.)*

A. 1,000
B. 1,200
C. 1,300
D. 1,400

2. A coach buys uniforms at $28 each and spends a total of $784. How many uniforms did he buy?

A. 28
B. 30
C. 32
D. 34

3. A smartphone plan charges $60 for the base plan and $15 per gigabyte of data used. If the total bill was $150, how many gigabytes were used?
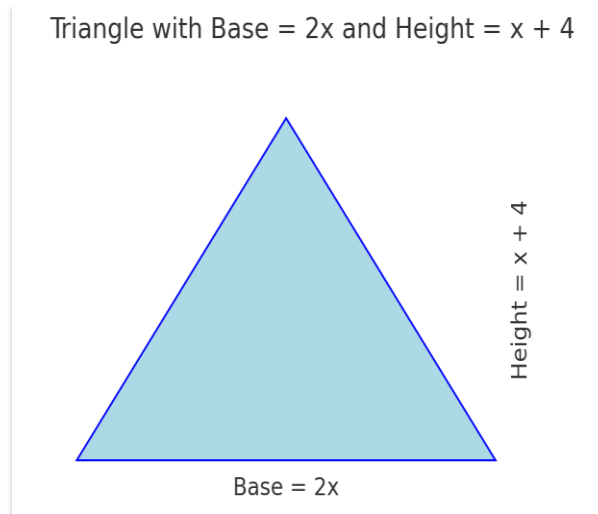
A. 5
B. 6
C. 7
D. 8

4. Jen's age is 4 years more than twice Mia's age. If the sum of their ages is 64, how old is Mia?

A. 18
B. 20
C. 22
D. 24

5. A triangle has a base of 2x and height of x + 4. If the area is 180 square cm, what is x?

A. 9

B. 10

C. 12

D. 15

Triangle with Base = 2x and Height = x + 4

Height = x + 4

Base = 2x

6. A concert hall has 200 fewer seats than triple the seats of a smaller venue. If the concert hall has 1,300 seats, how many are in the smaller venue?

A. 500

B. 550

C. 600

D. 650

7. The function f(x) = x^2 - 8x + 16 models the cost of producing x units of a product. What is the cost of producing 6 units?

A. 4

B. 8

C. 10

D. 12

8. Alicia wants to spend at least $120 on books. Each book costs $18. What's the minimum number of books she must buy?

A. 6

B. 7

C. 8

D. 9

9. The sum of two consecutive even integers is 94. What is the smaller number?

A. 44

B. 46

C. 48

D. 50

10. If a factory produces $2x^2 + 5x$ items one day and $x^2 - 2x$ items the next day, how many items in total did they produce? (*See Algebra 102 and 103 videos for lessons on polynomials.*)

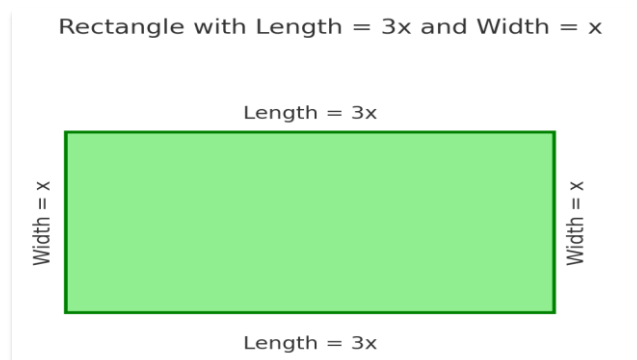A. $3x^2 + 3x$

B. $3x^2 + 7x$

C. $x^2 + 3x$

D. $2x^2 + 7x$

11. A company charges $50 for a setup fee and $25 per hour. If your bill was $175, how many hours did you use?

A. 4

B. 5

C. 6

D. 7

12. A clown earns $60 per party and has already made $540. How many parties did he work?

A. 8

B. 9

C. 10

D. 11

13. The perimeter of a rectangle is 96 meters. If the length is 3x and width is x, what is x?

A. 10

B. 12

C. 14

D. 16

Rectangle with Length = 3x and Width = x

Length = 3x

Width = x

Width = x

Length = 3x

14. The height of a ball thrown in the air is modeled by $h(t) = -16t^2 + 64t$. Let t represent time. What is the height at 2 seconds?

A. 64 ft
B. 96 ft
C. 100 ft
D. 120 ft

15. A vending machine has $2x^2 + 3x$ candies. If it is restocked with $3x^2 + x$ more, how many total candies? (*See Algebra 102 and 103 videos for lessons on polynomials.*)

A. $5x^2 + 4x$
B. $5x^2 + 2x$
C. $6x^2 + 3x$
D. $4x^2 + 5x$

Answer Key

1. Two buildings are for sale. The second building has 1,500 square feet less than twice the square footage of the first. Together they total 5,000 sq ft. What is the square footage of the first building?

Answer: C. 1,300

Expression: x + (2x - 1500) = 5000

2. A coach buys uniforms at $28 each and spends a total of $784. How many uniforms did he buy?

Answer: C. 28

Expression: 28x = 784

3. A smartphone plan charges $60 for the base plan and $15 per gigabyte of data used. If the total bill was $150, how many gigabytes were used?

Answer: B. 6

Expression: 60 + 15x = 150

4. Jen's age is 4 years more than twice Mia's age. If the sum of their ages is 64, how old is Mia?

Answer: B. 20

Expression: x + (2x + 4) = 64

5. A triangle has a base of 2x and height of x + 4. If the area is 180 square cm, what is x?

Answer: C. 12

Expression: $\frac{1}{2}(2x)(x + 4) = 180$

6. A concert hall has 200 fewer seats than triple the seats of a smaller venue. If the concert hall has 1,300 seats, how many are in the smaller venue?

Answer: A. 500

Expression: 3x - 200 = 1300

7. The function $f(x) = x^2 - 8x + 16$ models the cost of producing x units of a product. What is the cost of producing 6 units?

Answer: A. 4

Expression: $f(6) = 6^2 - 8(6) + 16$

8. Alicia wants to spend at least $120 on books. Each book costs $18. What's the minimum number of books she must buy?

Answer: B. 7

Expression: $18x \geq 120$

9. The sum of two consecutive even integers is 94. What is the smaller number?

Answer: B. 46

Expression: x + (x + 2) = 94

10. If a factory produces $2x^2 + 5x$ items one day and $x^2 - 2x$ items the next day, how many items in total?

Answer: A. $3x^2 + 3x$

Expression: $(2x^2 + 5x) + (x^2 - 2x)$

11. A company charges $50 for a setup fee and $25 per hour. If your bill was $175, how many hours did you use?

Answer: B. 5

Expression: 50 + 25x = 175

12. A clown earns $60 per party and has already made $540. How many parties did he work?

Answer: B. 9

Expression: 60x = 540

13. The perimeter of a rectangle is 96 meters. If the length is 3x and width is x, what is x?

Answer: B. 12

Expression: 2(3x + x) = 96

14. The height of a ball thrown in the air is modeled by $h(t) = -16t^2 + 64t$. What is the height at 2 seconds?

Answer: B. 96 ft

Expression: $h(2) = -16(2^2) + 64(2)$

15. A vending machine has $2x^2 + 3x$ candies. If it is restocked with $3x^2 + x$ more, how many total candies?

Answer: A. $5x^2 + 4x$

Expression: $(2x^2 + 3x) + (3x^2 + x)$