Unit 6 – Equations

Grade 7 Mathematics
Exam Review

1. Which are expressions?

P: $\frac{x}{3} - 5 = 5$

Q: $12 - 2x$

R: $3x - 6 = 0$

S: $\frac{7 - x}{2} + 4$

2. Which are equations?

P: $10 - 5x = 2$

Q: $5x + 9$

R: $\frac{x}{3} - 2$

S: $\frac{x - 5}{6} = 3$

3. Solve this equation: $x + 5 = 15$

4. Solve this equation: $4x = 16$

5. Solve this equation: $w \div 2 = 8$

6. Solve this equation: $\frac{y}{3} = 8$

7. Find the value of x that makes this equation true.
$2x + 6 = 40$

8. Shaun saved $10.00 from his paycheck. This was half the amount of money he had earned.
How much money did Shaun earn?

9. Write an equation for this sentence. Then solve the equation.
Five more than a number is 10.

10. Write an equation for this sentence. Then solve the equation.
A number multiplied by 6 is 18.

11. Alan has $90 and he spends $16 each week. Write an equation you could use to find the money Alan has after 3 weeks.

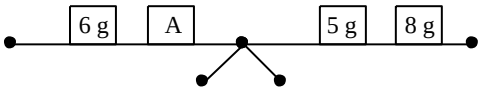
12. Janet bought 17 DVDs for $238. Write an equation you could use to find the cost of each DVD.

13. Solve this equation: $m + 6 = 13$

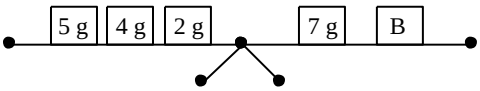
14. Solve this equation: $n + 19 = 25$

15. Solve this equation: $12 = t + 6$

16. The 2 pans of the scales are balanced. Find the value of the unknown mass A.



17. The 2 pans of the scales are balanced. Find the value of the unknown mass B.



18. Solve this equation: $4 + 9 = y + 7$

19. Solve this equation: $v + v + 7 = 6 + 6$

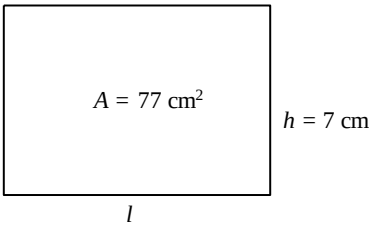
20. Solve this equation: $2z + 23 = 29$

21. Write an equation for this sentence. Then solve the equation.
Four more than a number is 16.

22. A 2-pan balance has 2 masses of 8 g and 4 g on the left pan, and an unknown mass and a mass of 3 g on the right pan. What is the value of the unknown mass if the 2 pans are balanced?

23. A 2-pan balance has 2 identical unknown masses on the left pan, and 3 masses of 9 g, 2 g, and 5 g on the right pan. What is the value of each unknown mass if the 2 pans are balanced?

24. The area of this rectangle is given by the formula $A = l \times h$.
Find the length l of the rectangle.

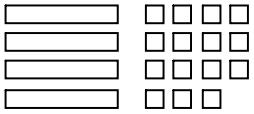


25. ▭ This tile represents x.
□ This tile represents +1.
Identify the tiles that model $2x + 4$.

26. ▭ This tile represents x.

□ This tile represents +1.

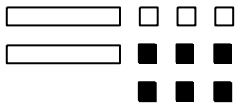
Write an expression modelled by this picture.



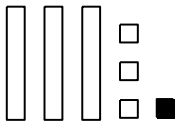
27. Solve this equation: $x + 5 = 8$

28. Solve this equation: $x - 6 = 12$

29. A white square represents +1, a black square represents -1, and a rectangle represents the variable x.
Write an expression modelled by this picture.



30. A white square represents +1, a black square represents -1, and a rectangle represents the variable x.
Write an expression modelled by this picture.



31. Solve this equation: $-46 = x + 43$

32. Solve this equation: $-8 = x - 2$

33. A number increased by 4 is 7. Write an equation to find the number. Solve the equation.

34. Four less than a number is 9. Write an equation to find the number. Solve the equation.

35. Overnight, the temperature dropped 6°C to -3°C. Write an equation to find the starting temperature. Solve the equation.

36. Solve this equation: $3 + x = 9$

37. Solve this equation: $x - 3 = 15$

38. Solve this equation: $4x = 32$

39. Solve this equation: $4x - 9 = 15$

40. Solve this equation: $3x + 8 = 14$

41. Each term of a number pattern is represented by $2n + 3$, where n represents the term number.
What is the term number for a term value of 29?

42. Write an equation to find this number: the number reduced by 5 is equal to 7.
Solve the equation.

43. Write an equation to find this number: 2 more than 4 times the number is 14.
Solve the equation.

44. Write an equation to find this number: 9 more than double the number is 15.
Solve the equation.

45. The perimeter of a regular hexagon is 36 cm.
Write an equation you can use to find the side length of the hexagon. Solve the equation.

46. In x weeks and 3 days, it will be Kevin's birthday. His birthday is in 31 days.
Write an equation you can use to find the value of x. Solve the equation.

47. Caitlin worked in a clothing store last weekend for \$5/h. She was also paid a bonus of \$3. She earned a total of \$43. Write an equation you can use to find how many hours she worked. Solve the equation.

48. Solve this equation: $x - 11 = 12$

49. Solve this equation: $8x = 24$

50. Solve this equation: $\frac{x}{3} = 8$

51. Solve this equation: $\frac{x}{9} = 2$

52. Solve this equation: $3x + 8 = 17$

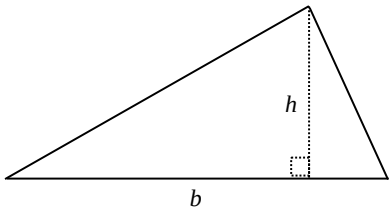
53. Solve this equation: $7x - 2 = 26$

54. A 2-pan balance has 2 identical unknown masses and a mass of 19 g on the left pan, and 2 masses of 20 g and 23 g on the right pan. What is the value of each unknown mass if the 2 pans are balanced?

55. Liam is solving an equation modelled by algebra tiles. On the left side of the line representing the equal sign, there are 1 x-tile, 6 positive unit tiles, and 5 negative unit tiles. On the right side, there are 9 positive unit tiles and 7 negative unit tiles. What is the value of x?

56. The area of this triangle is given by the formula $A = \frac{b \times h}{2}$.

If the triangle has an area of 54 cm^2 and a base length of 12 cm, what is the height of the triangle?



57. The 3 sides of a triangle measure (x + 5) cm, (x + 6) cm, and (x + 7) cm.
If the perimeter of the triangle is 51 cm, find the value of x.

58. What is the number that makes this sentence true?
Fifteen more than 4 times a number is 31.

59. Martin had $40. He spent an average of $13 each week. Write an equation you can use to find the amount, C, Martin would have after n weeks.

Unit 6 - Answer Key

1. Q and S

2. P and S

3. 10

4. 4

5. 16

6. 24

7. 17

8. $20.00

9. $x + 5 = 10$, $x = 5$

10. $6x = 18$, $x = 3$

11. $A = 90 - 3 \times 16$

12. $C = \frac{238}{17}$

13. 7

14. 6

15. 6

16. 7 g

17. 4 g

18. 6

19. 2.5

20. 3

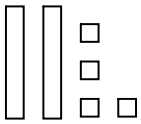
21. $x + 4 = 16$, $x = 12$

22. 9 g

23. 8 g

24. 11 cm

25.



26. $4x + 15$

27. 3

28. 18

29. $2x - 3$

30. $3x + 2$

31. -89

32. -6

33. $x + 4 = 7$, $x = 3$

34. $x - 4 = 9$, $x = 13$

35. $x - 6 = -3$, $x = 3$

36. 6

37. 18

38. 8

39. 6

40. 2

41. 13

42. $x - 5 = 7$, $x = 12$

43. $4x + 2 = 14$, $x = 3$

44. $2x + 9 = 15$, $x = 3$

45. $6x = 36$, $x = 6$

46. $7x + 3 = 31$, $x = 4$

47. $5x + 3 = 43$, $x = 8$

48. 23

49. 3

50. 24

51. 18

52. 3

53. 4

54. 12

55. 1

56. 9 cm

57. 11 cm

58. 4

59. $C = 40 - 13n$

x

a

m

R

e