____ 25. Use algebra. Write a relation for the Input/Output table.

Input p	1	2	3	4	5
Output	9	10	11	12	13

a. $p + 9$ b. $p + 8$ c. $8p$ d. $p + 7$

____ 26. Use algebra. Write a relation for the Input/Output table.

Input x	1	2	3	4	5
Output	49	48	47	46	45

a. $x - 50$ b. $50 - x$ c. $x + 45$ d. $49 - x$

____ 27. Complete the Input/Output table.

Input x	1	2	3	4	5
Output $x + 3$					

____ 28. Complete the Input/Output table.

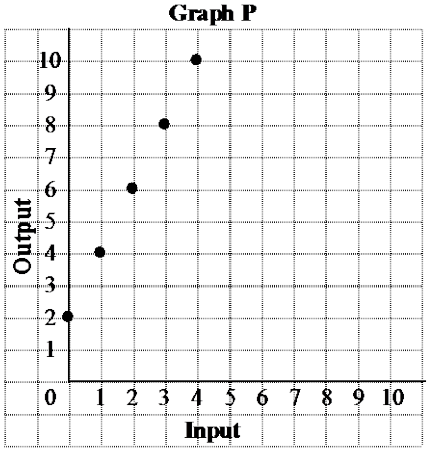
Input p	1	2	3	4	5
Output $4p + 7$					

____ 29. Complete the Input/Output table.

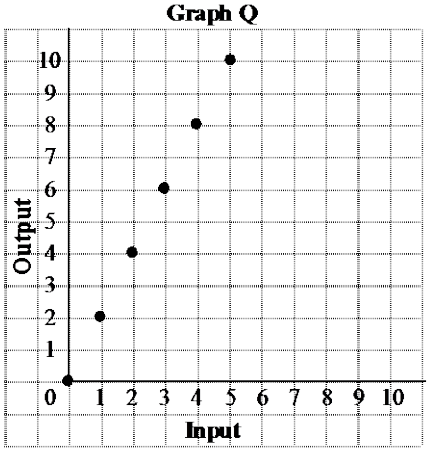
Input q	1	2	3	4	5
Output $11q - 8$					

____ 30. Which graph shows how $x + 2$ is related to x?

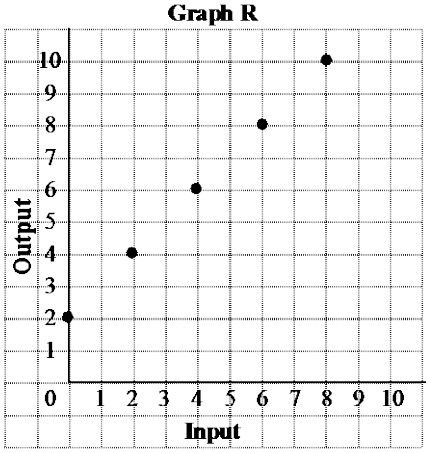
Graph P



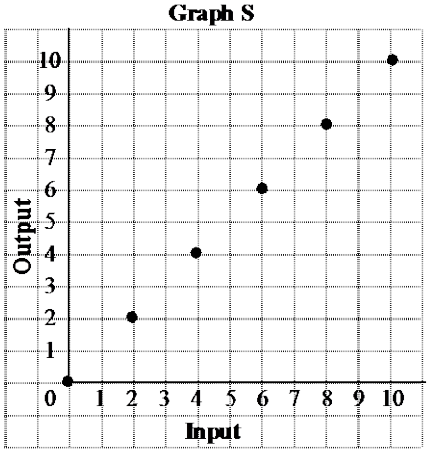
Graph Q



Graph R



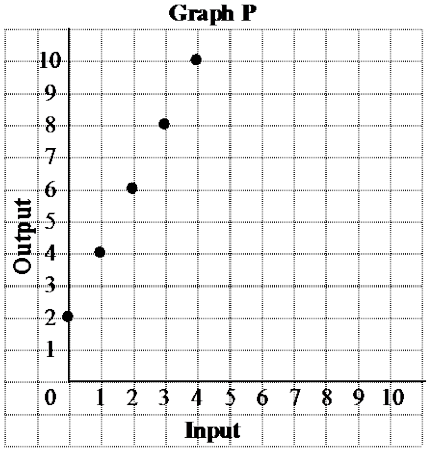
Graph S



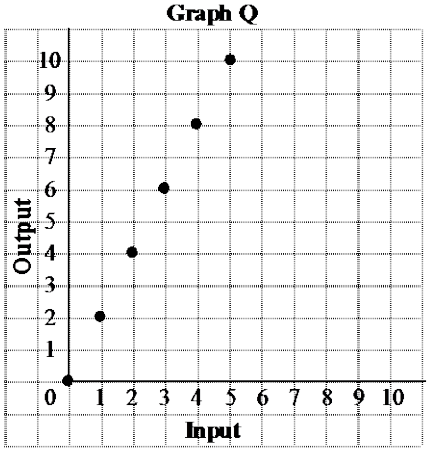
a. Graph R b. Graph S c. Graph P d. Graph Q

____ 31. Which graph shows how 2*x* is related to *x*?

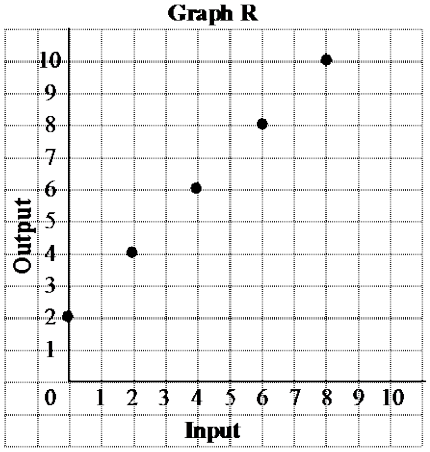
Graph P



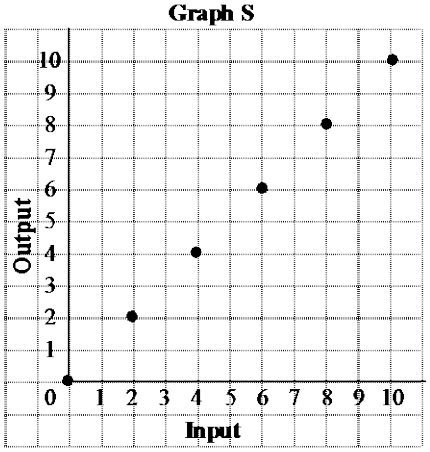
Graph Q



Graph R



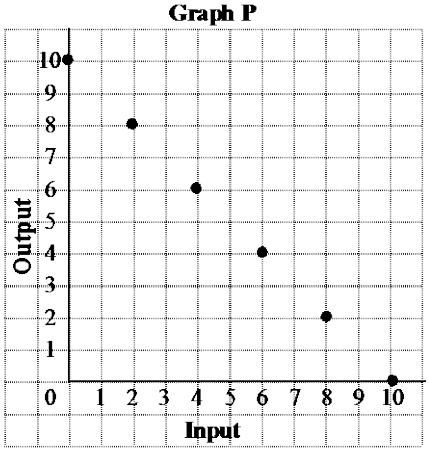
Graph S



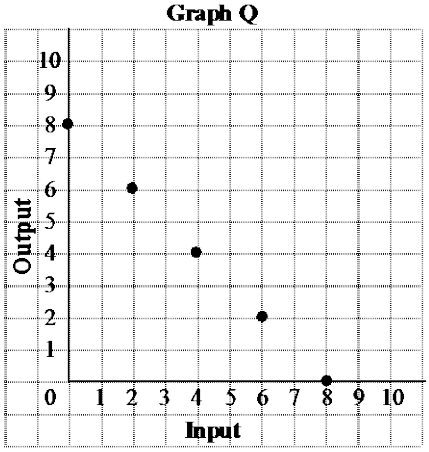
a. Graph S b. Graph P c. Graph R d. Graph Q

____ 32. Which graph shows how 10 – 2*x* is related to *x*?

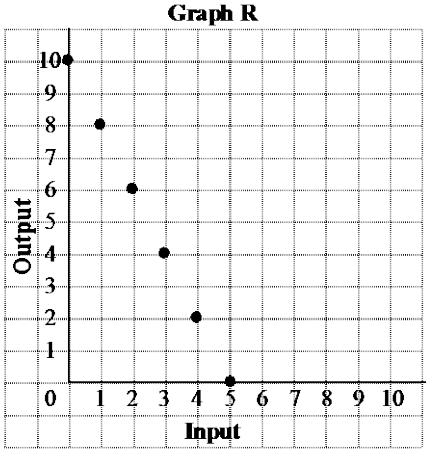
Graph P



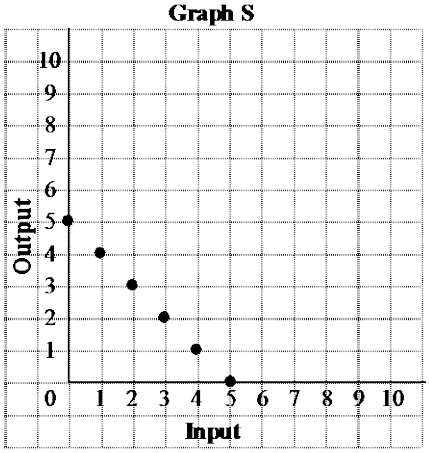
Graph Q



Graph R



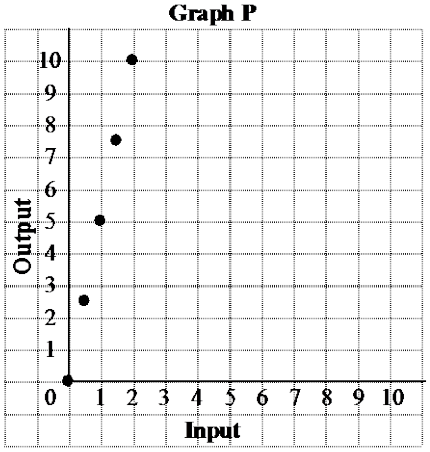
Graph S



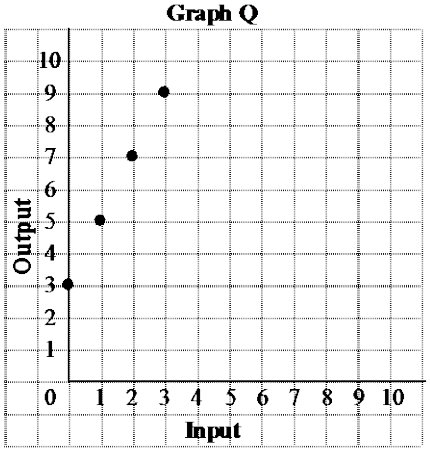
a. Graph P b. Graph S c. Graph R d. Graph Q

____ 33. Which graph shows how $2x + 3$ is related to x?

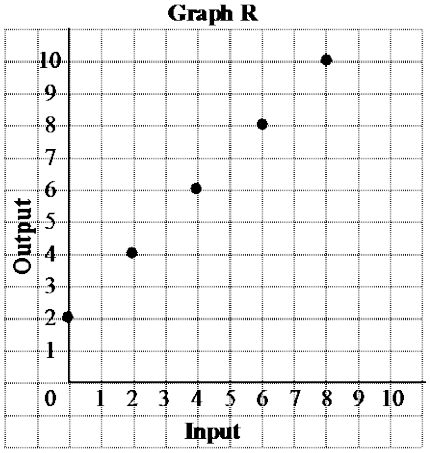
Graph P



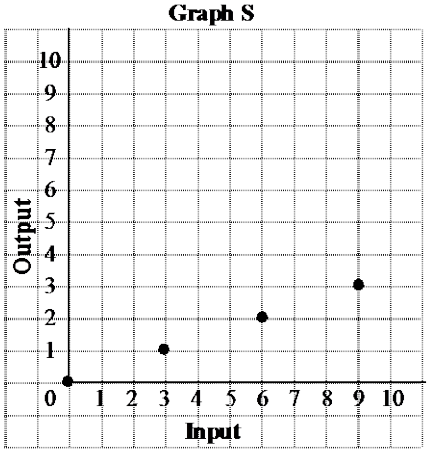
Graph Q



Graph R



Graph S



a. Graph P b. Graph S c. Graph R d. Graph Q

____ 34. A coach has 40 granola bars and gives 5 bars to each player. Write a relation to show how the number of granola bars that remain is related to the number of players, m.

a. $\frac{35}{m}$ b. $35m$ c. $\frac{40}{5m}$ d. $40 - 5m$

____ 35. Write an equation for the sentence.
Three less than a number is 10.

a. $n + 3 = 10$ b. $n - 3 = 10$ c. $\frac{n}{3} = 10$ d. $3 - n = 10$

____ 36. Write an equation for the sentence.
A number divided by 4 is 6.

a. $n - 4 = 6$ b. $\frac{4}{n} = 6$ c. $\frac{n}{4} = 6$ d. $4 - n = 6$

____ 37. Write an equation for "I subtract 14 from a number. The answer is 21."

a. $n - 14 = 21$ b. $n + 14 = 21$ c. $14 - n = 21$ d. $\frac{n}{14} = 21$

____ 38. Write an equation for the sentence.
Twenty-seven less than a number is 24.

a. $y - 27 = 24$
c. $24 - y = 27$
b. $27 - y = 24$
d. $y + 27 = 24$

____ 39. Write an equation for the sentence.
Four added to 4 times a number is 64.

a. $4 \square 4x = 64$
c. $4x = 64 + 4$
b. $4x - 4 = 64$
d. $4 + 4x = 64$

____ 40. Write an equation for the situation.
Patricia has p posters. She sold 9 and has 20 left.

a. $p = 20 - 9$
c. $p + 9 = 20$
b. $p + 20 = 9$
d. $p - 9 = 20$

____ 41. Write an equation for the situation.
Each of 5 people contributed x dollars to buy a gift that costs $40.

a. $5 + x = 40$
c. $5x = 40$
b. $40 - x = 5$
d. $40x = 5$

____ 42. A tree was 4 m tall. One year later, the tree grew f m and became 10 m tall. Write an equation for the height of the tree.

a. $f + 10 = 4$
c. $\frac{f}{10} = 4$
b. $f - 4 = 10$
d. $4 + f = 10$

____ 43. Brandon has 54 CDs. This number is 2 times as many CDs as Ingrid has. Write an equation you could use to find the number of CDs Ingrid has.

a. $n - 2 = 54$
c. $2n = 54$
b. $n + 2 = 54$
d. $\frac{n}{2} = 54$

____ 44. Identify the variable in the equation.
$5 + 9x = 68$

a. 5
b. $9x$
c. x
d. 68

____ 45. Use tiles to solve the equation.
$6x = 24$

a. 30
b. 144
c. 4
d. 18

____ 46. Write an equation for the sentence.
Seven more than a number is 15.

a. $x - 7 = 15$
b. $7x = 15$
c. $x + 7 = 15$
d. $x + 15 = 7$

____ 47. Write an equation for the sentence.
A number multiplied by 3 is 15.

a. $\frac{x}{3} = 15$
b. $3x = 15$
c. $5x = 15$
d. $3 + x = 15$

____ 48. Write an equation for the sentence.
The sum of 7 and a number is 26.

a. $7x = 26$ b. $7 + x = 26$ c. $7 - x = 26$ d. $26 + x = 7$

____ 49. Write an equation for the sentence.
The sum of a number and 7 is 20.

a. $7x = 20$ b. $x + 20 = 7$ c. $x - 7 = 20$ d. $x + 7 = 20$

____ 50. One book costs $9. How many books could be bought with $63?

a. 45 b. 6 c. 54 d. 7

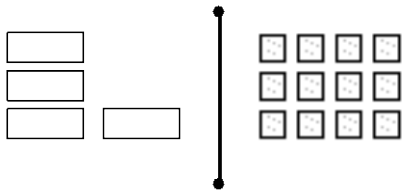
____ 51. Eleven more than 5 times a number is 31. What is the number?

a. 15 b. 4 c. 16 d. 93

____ 52. Write an equation for the sentence.
A number divided by 4 is 8.

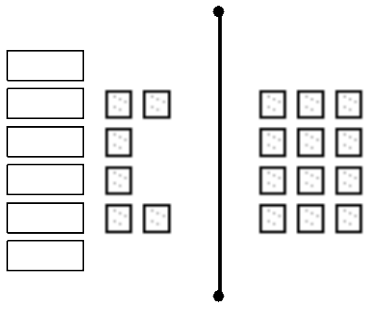
a. $\frac{4}{x} = 8$ b. $4 - x = 8$ c. $\frac{x}{4} = 8$ d. $x - 4 = 8$

____ 53. Let one white square represent +1 and one white rectangle represent x.
Solve the equation modelled by this set of tiles.



a. $x = 3$ b. $x = 12$ c. $x = 4$ d. $x = 1$

____ 54. Let one white square represent +1 and one white rectangle represent x.
Solve the equation modelled by this set of tiles.



a. $x = 1$ b. $x = 6$ c. $x = 3$ d. $x = 8$

____ 55. Which are expressions?

P: $\frac{x}{8} - 5 = 5$

Q: 11 - 4*x*

R: 4*x* - 8 = 0

S: $\frac{9-x}{4} + 7$

a. R and S b. P and Q c. P and R d. Q and S

____ 56. Which are equations?

P: 10 - 5*x* = 2

Q: 3*x* + 9

R: $\frac{x}{4} - 3$

S: $\frac{x-3}{4} = 3$

a. Q and R b. P and S c. R and S d. P and Q

____ 57. Solve this equation: *x* + 3 = 9

a. 6 b. 5 c. 12 d. 3

____ 58. Solve this equation: 3*x* = 12

a. 3 b. 4 c. 15 d. 9

____ 59. Solve this equation: $q \div 6 = 6$

a. 12 b. 36 c. 42 d. 38

____ 60. Solve this equation: $\frac{c}{11} = 5$

a. 55 b. 6 c. 16 d. 50

____ 61. Find the value of *x* that makes this equation true.

$2x + 6 = 14$

a. 4 b. 20 c. 7 d. 10

____ 62. Shaun saved $12.00 from his paycheck. This was half the amount of money he had earned. How much money did Shaun earn?

a. $24.00 b. $26.00 c. $12.00 d. $21.50

____ 63. Write an equation for this sentence. Then solve the equation.
Seven more than a number is 14.

a. 7*x* = 14, *x* = 2 c. *x* + 7 = 14, *x* = 7

b. 7*x* = 14, *x* = 7 d. *x* + 7 = 14, *x* = 2

____ 64. Write an equation for this sentence. Then solve the equation.
A number multiplied by 4 is 12.

a. 4 + *x* = 12, *x* = 3 c. *x* + 4 = 12, *x* = 8

b. 4*x* = 12, *x* = 8 d. 4*x* = 12, *x* = 3

____ 65. Janet bought 18 DVDs for $252. Write an equation you could use to find the cost of each DVD.

a. $C = \frac{18}{252}$

b. $C = \frac{252}{18}$

c. $C = 18 - 14$

d. $C = 252 - 18$

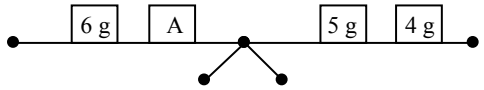
____ 66. Solve this equation: $n + 12 = 25$

a. 20 b. 11 c. 37 d. 13

____ 67. Solve this equation: $15 = t + 12$

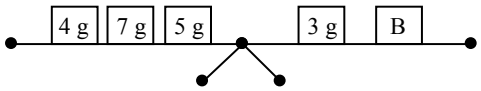
a. 3 b. 5 c. 15 d. 27

____ 68. The 2 pans of the scales are balanced. Find the value of the unknown mass A.



a. 7 g b. 48 g c. 3 g d. 14 g

____ 69. The 2 pans of the scales are balanced. Find the value of the unknown mass B.



a. 13 g b. 11 g c. 5 g d. 47 g

____ 70. Solve this equation: 5 + 11 = *y* + 8

a. 53 b. 47 c. 7 d. 8

____ 71. Solve this equation: *v* + *v* + 7 = 6 + 4

a. 8.5 b. 1.5 c. 3 d. 2

____ 72. Write an equation for this sentence. Then solve the equation.
Five more than a number is 15.

a. *x* + 5 = 15, *x* = 10

b. *x* + 5 = 15, *x* = 3

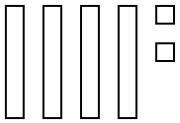
c. 5*x* = 15, *x* = 10

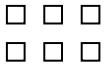
d. 5*x* = 15, *x* = 3

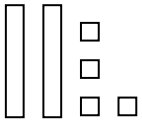
____ 73. A 2-pan balance has 2 identical unknown masses on the left pan, and 3 masses of 3 g, 2 g, and 9 g on the right pan. What is the value of each unknown mass if the 2 pans are balanced?

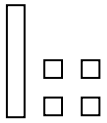
a. 12 g b. 7 g c. 4 g d. 14 g

____ 74. ▭ This tile represents x.
□ This tile represents +1.
Identify the tiles that model $2x + 4$.

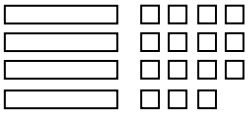
a. 

c. 

b. 

d. 

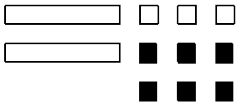
____ 75. ▭ This tile represents x.
□ This tile represents +1.
Write an expression modelled by this picture.



a. $x + 15$ b. $4x + 15$ c. $4x - 15$ d. $4x - 1$

____ 76. Solve this equation: $x + 2 = 6$
a. 4 b. 8 c. 3 d. 12

____ 77. A white square represents +1, a black square represents −1, and a rectangle represents the variable x.
Write an expression modelled by this picture.



a. $2x + 3$ b. $2x + 9$ c. $2x - 6$ d. $2x - 3$

____ 78. Solve this equation: $-48 = x + 45$
a. -93 b. 3 c. 93 d. -3

____ 79. Solve this equation: $-7 = x - 2$
a. 9 b. -9 c. -5 d. 5

____ 80. A number increased by 4 is 9. Write an equation to find the number. Solve the equation.
a. $x - 9 = 4$, $x = 13$ c. $x + 4 = 9$, $x = -5$
b. $x + 9 = 4$, $x = -13$ d. $x + 4 = 9$, $x = 5$

____ 81. Overnight, the temperature dropped 9°C to −3°C. Write an equation to find the starting temperature. Solve the equation.
a. $x + 3 = 9$, $x = 6$ c. $x + 9 = 3$, $x = -6$
b. $x - 9 = -3$, $x = 6$ d. $x - 3 = -9$, $x = -6$

____ 82. Solve this equation: $3 + x = 9$
a. 6 b. 3 c. 12 d. 5

____ 83. Solve this equation: $5x = 40$

a. -35 b. 8 c. 4 d. 35

____ 84. Solve this equation: $2x - 5 = 7$

a. 6 b. 10 c. $\frac{1}{5}$ d. 4

____ 85. Each term of a number pattern is represented by $6n + 3$, where *n* represents the term number. What is the term number for a term value of 69?

a. 11 b. 66 c. 60 d. 69

____ 86. Write an equation to find this number: the number reduced by 6 is equal to 8. Solve the equation.

a. $6 - x = 8$, $x = 14$ c. $x - 8 = 6$, $x = -2$

b. $x + 6 = 8$, $x = 2$ d. $x - 6 = 8$, $x = 14$

____ 87. Write an equation to find this number: 8 more than 3 times the number is 17. Solve the equation.

a. $3x + 8 = 17$, $x = 3$ c. $3x - 8 = 17$, $x = 2$

b. $3x + 8 = 17$, $x = 6$ d. $3x + 17 = 8$, $x = -3$

____ 88. Write an equation to find this number: 9 more than double the number is 15. Solve the equation.

a. $2x - 15 = 9$, $x = -3$ c. $2x + 9 = 15$, $x = 12$

b. $2x + 9 = 15$, $x = 3$ d. $2x - 9 = 15$, $x = 12$

____ 89. The perimeter of a regular hexagon is 54 cm. Write an equation you can use to find the side length of the hexagon. Solve the equation.

a. $6x = 54$, $x = 48$ c. $x + 6 = 54$, $x = 48$

b. $x + 6 = 54$, $x = 9$ d. $6x = 54$, $x = 9$

____ 90. In *x* weeks and 3 days, it will be Kevin's birthday. His birthday is in 52 days. Write an equation you can use to find the value of *x*. Solve the equation.

a. $7x + 3 = 52$, $x = 7$ c. $x + 3 = 7$, $x = 4$

b. $21x = 52$, $x = 31$ d. $7x - 3 = 52$, $x = 7$

____ 91. Caitlin worked in a clothing store last weekend for $6/h. She was also paid a bonus of $7. She earned a total of $55. Write an equation you can use to find how many hours she worked. Solve the equation.

a. $6x + 7 = 55$, $x = 8$ c. $x + 6 + 7 = 55$, $x = 42$

b. $7x + 6 = 55$, $x = 8$ d. $6x - 7 = 55$, $x = 10$

____ 92. Solve this equation: $x - 15 = 8$

a. 120 b. 23 c. -23 d. –7

____ 93. Solve this equation: $\frac{x}{2} = 5$

a. 7 b. 10 c. 3 d. 2

____ 94. Solve this equation: $\frac{x}{7} = 4$

a. 11 b. 28 c. 2 d. 3

____ 95. Solve this equation: $5x + 7 = 22$

a. 10 b. 3 c. 6 d. 9

____ 96. Solve this equation: $6x - 2 = 22$

a. 3 b. 17 c. 4 d. 18

____ 97. A 2-pan balance has 2 identical unknown masses and a mass of 13 g on the left pan, and 2 masses of 18 g and 23 g on the right pan. What is the value of each unknown mass if the 2 pans are balanced?

a. 14 b. 28 c. 27 d. 26

____ 98. 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, 4 positive unit tiles, and 3 negative unit tiles. On the right side, there are 7 positive unit tiles and 5 negative unit tiles. What is the value of *x*?

a. –5 b. 5 c. 1 d. 19

____ 99. What is the number that makes this sentence true?
Fourteen more than 6 times a number is 38.

a. 3 b. 4 c. 26 d. 18

____ 100. Martin had $35. He spent an average of $12 each week. Write an equation you can use to find the amount, *C,* Martin would have after *n* weeks.

a. $C = 23n$ b. $C = 35 - 12n$ c. $C = 35 - \frac{12}{n}$ d. $C = \frac{23}{n}$