Spot and correct the error

Example 1: $5n^2 = 45$

Student's solution:

$$\frac{5n^2}{5} = \frac{45}{5}$$
$$n^2 = 9$$
$$n = 3$$

Explain the error:

n can also equal -3 as $(-3)^2 = 9$

$\therefore$ one solution is missing

Example 1: $16n^2 - 25 = 0$

Student's solution:

$$16n^2 - 25 = 0$$
$$+25 \quad +25$$
$$16n^2 = 25$$
$$n^2 = \frac{16}{25} \quad \leftarrow \text{error}$$
$$n = \pm\frac{4}{5}$$

Explain the error:

the student has incorrectly divided the equation by 16.

$n^2 = \frac{25}{16}$ not $\frac{16}{25}$

$\therefore \quad n = \pm\frac{5}{4}$

Equations and formulae

Topic Test — PART A

Instructions This part consists of 12 multiple-choice questions
Each question is worth 1 mark
Fill in only ONE CIRCLE for each question
Calculators are NOT allowed

Time allowed: 15 minutes **Total marks = 12**

					Marks
1	If $\frac{n}{3} = 7$, n equals	(A) 7	(B) 11	(C) 17	(D) 21	1
2	If $x - 10 = -2$, x equals	(A) -12	(B) -8	(C) 8	(D) 12	1
3	If $2x - 5 = 21$, what is the value of x?	(A) 6	(B) 8	(C) 13	(D) 26	1
4	If $\frac{m}{3} = 6$, find the value of m.	(A) 2	(B) 3	(C) 9	(D) 18	1
5	If $2p - 5 = 23$, then p equals	(A) 8	(B) 9	(C) 14	(D) 28	1
6	If $n + 3 = -4$ then n equals	(A) -7	(B) -1	(C) 1	(D) 7	1
7	Solve for x, $5x + 3 = 2(x + 12)$	(A) 3	(B) 5	(C) 9	(D) 7	1
8	If $2(t + 3) = t - 4$ then t equals	(A) -10	(B) 2	(C) 8	(D) none of these	1
9	If $2(7 - x) = 3$ then x equals	(A) 11	(B) -17	(C) $8\frac{1}{2}$	(D) $5\frac{1}{2}$	1
10	$2(x - 3) = 3(2x + 4)$ then x equals	(A) $1\frac{1}{2}$	(B) $\frac{1}{4}$	(C) $-4\frac{1}{2}$	(D) $-3\frac{3}{4}$	1

Score: _____ / 10

Equations and formulae

Topic Test — PART B

Instructions This part consists of 15 questions
Each question is worth 1 mark
Write answers in the answers-only column

Time allowed: 20 minutes **Total marks = 15**

Questions	Answers only	Marks
Solve the following equations.		
1 $x - 7 = 30$		1
2 $\frac{x}{12} = 96$		1
3 $3x + 10 = 5x - 2$		1
4 $4(p + 7) = 30$		1
5 I think of a number, double it, add 8 and the result is 42. By solving the equation, find the number.		1
6 $\frac{x}{4} = \frac{2}{3}$		1
7 $\frac{5x}{3} + \frac{1}{2} = 4$		1
8 $2x - 3 = 5$		1
9 $\frac{x-2}{3} = 10$		1
10 $3(x + 4) = x + 19$		1
12 $4(2x - 5) = 0$		1
13 $\frac{x-2}{3} + 5 = 9$		1
14 $3(x - 1) = 9$		1
15 $4x - 3 = 2x + 9$		1

Score: _____ / 14

LINEAR EQUATIONS PRACTICE

1. $4x = 4$
2. $x + 6 = -7$
3. $x - 4 = 7$
4. $\frac{x}{3} = -9$
5. $2x + 4 = 8$
6. $14 = 3 + 2x$
7. $8x - 3 = -19$
8. $6 - x = 9$
9. $-x = -12$
10. $3(x - 2) = 6$
11. $-3(2x - 8) = -12$
12. $4(6 + 2x) = 0$
13. $3x + 2x + 6 = -15$
14. $4 = -2(x + 3)$
15. $27 = 46 + 2x - x$
16. $4x + 6 - 7x + 9 = 18$
17. $4 + 3(x + 2) = 10$
18. $-3 + 3x = -2(x + 1)$
19. $9x - 6 = -3x + 30$
20. $-(x + 2) = 2(3x - 6)$
21. $2x + 6 = 3x + 9 - 3$
22. $-5x + 3 = 2x + 10$
23. $3x - 12x = 24 - 9x$
24. $2(x + 4) = -3(x + 5)$
25. $4(2x - 3) + 4 = 8x - 8$
26. $6x + 11 = -(6x + 5)$
27. $2(x + 7) = 6x + 9 - 4x$
28. $-5(3 - 4x) = -6 + 20x - 9$
29. $4(x - 3) - (x - 5) = 0$
30. $-2(4 - x) = 6(x + 2) + 3x$
31. $\frac{4}{7} = \frac{x}{21}$
32. $\frac{x}{4} = \frac{-20}{16}$
33. $\frac{9c}{10} = \frac{9}{5}$
34. $\frac{1}{4} = \frac{z+1}{4}$
35. $\frac{a}{5} = \frac{a-3}{2}$
36. $\frac{n}{10} = 9 - \frac{n}{5}$
37. $\frac{2}{8} + \frac{3}{4} = \frac{w}{5}$
38. $x - \frac{3}{4} = -2x$
39. $\frac{x}{4} - \frac{x}{6} = \frac{1}{4}$
40. $a - \frac{a}{3} + \frac{a}{5} = 26$
41. $\frac{12}{10} = \frac{z}{25}$
42. $\frac{-2}{6} = \frac{3c}{9}$
43. $\frac{x+4}{7} = \frac{3}{7}$
44. $\frac{4x+5}{6} = \frac{7}{2}$
45. $6 - \frac{x}{4} = \frac{x}{8}$
46. $\frac{x}{3} - \frac{3x}{4} = \frac{1}{12}$
47. $\frac{5}{2} - x = 3x$
48. $\frac{3-5y}{4} = \frac{2-4y}{3}$
49. $\frac{2x-1}{3} - \frac{3x}{4} = \frac{5}{6}$
50. $-\frac{x}{4} = 12$
51. $-x = -12$
52. $-2x = -16$
53. $2x = -14$
54. $\frac{1}{7}x = -8$
55. $\frac{1}{7}x = 2$
56. $-\frac{x}{2} = 4$
57. $-x = 26$
58. $3x = 15$
59. $4x = -32$
60. $\frac{1}{3}x = 5$
61. $\frac{1}{9}x = 5$
62. $-\frac{5}{3}x = -15$
63. $-\frac{6}{5}x = -30$
64. $\frac{6}{5}x = 90$
65. $\frac{1}{3}x = 4$
66. $\frac{7}{6}x = 168$
67. $\frac{1}{6}x = 2$
68. $-\frac{9}{5}x = -45$
69. $-\frac{4}{9}x = -36$
70. $4x - 4 = -40$
71. $9x - 7 = -34$
72. $\frac{7}{8}y - 6 = 8$
73. $10 - x = 6$
74. $-2x - 4x = 1$
75. $-9x - 9x = -9$
76. $\frac{x}{3} - \frac{x}{5} = 2$
77. $\frac{x}{7} - \frac{x}{9} = 2$
78. $\frac{x}{3} - \frac{x}{9} = 6$
79. $\frac{x}{8} - \frac{x}{9} = 1$
80. $\frac{5}{9}y - 4 = 6$
81. $x + 0.4x = 3.5$
82. $5(x - 3) = 45$
83. $-3(x + 7) = 9$
84. $-4(x - 6) = 12$
85. $8 = 2(x - 5) + 6x$
86. $2 = 7(x + 4) + 9x$
87. $1 = 3(x - 2) + 3 - 2x$
88. $3 = 4(x - 2) + 5 - 3x$
89. $3.65 - 7.4x + 1.12 = 21.76$
90. $-8x + 3 - 2x = -6x + 3 - 4x$
91. $10x + 3 + 10x = 13x - 3 + 7x$
92. $6 + 3x = 5(x - 1) - 3(x - 2)$
93. $10 - 5x = 3(x - 4) - 2(x + 7)$
94. $9.2y - 4.3 = 50.9$
95. $0.05z + 0.2 = 0.15z - 10.5$
96. $0.25(60) + 0.10x = 0.15(60 + x)$
97. $0.5(3q + 87) = 1.5q + 43.5$
98. $0.4(y + 10) + 0.6y = 2$
99. $21.1w + 4.6 = 10.9w + 35.2$
100. $0.125x = 0.025(5x + 1)$

LINEAR EQUATIONS PRACTICE ANSWERS

1. $x = 1$
2. $x = -13$
3. $x = 11$
4. $x = -27$
5. $x = 2$
6. $x = \frac{11}{2}$
7. $x = -2$
8. $x = -3$
9. $x = 12$
10. $x = 4$
11. $x = 6$
12. $x = -3$
13. $x = -\frac{21}{5}$
14. $x = -5$
15. $x = -19$
16. $x = -1$
17. $x = 0$
18. $x = \frac{1}{5}$
19. $x = 3$
20. $x = \frac{10}{7}$
21. $x = 0$
22. $x = -1$
23. No Solution
24. $x = -\frac{23}{5}$
25. All real numbers
26. $x = -\frac{4}{3}$
27. No Solution
28. All real numbers
29. $x = \frac{7}{3}$
30. $x = -\frac{20}{7}$
31. $x = 12$
32. $x = -5$
33. $c = 2$
34. $z = 0$
35. $a = 5$
36. $n = 30$
37. $w = 5$
38. $x = \frac{1}{4}$
39. $x = 3$
40. $a = 30$
41. $z = 30$
42. $c = -1$
43. $x = -1$
44. $x = 4$
45. $x = 16$
46. $x = -\frac{1}{5}$
47. $x = \frac{5}{8}$
48. $y = -1$
49. $x = -14$
50. $x = -48$
51. $x = 12$
52. $x = 8$
53. $x = -7$
54. $x = -56$
55. $x = 14$
56. $x = -8$
57. $x = -26$
58. $x = 5$
59. $x = -8$
60. $x = 15$
61. $x = 45$
62. $x = 9$
63. $x = 25$
64. $x = 75$
65. $x = 12$
66. $x = 144$
67. $x = 12$
68. $x = 25$
69. $x = 81$
70. $x = -9$
71. $x = -3$
72. $y = 16$
73. $x = 4$
74. $x = -\frac{1}{6}$
75. $x = \frac{1}{2}$
76. $x = 15$
77. $x = 63$
78. $x = 27$
79. $x = 72$
80. $y = 18$
81. $x = 2.5$
82. $x = 12$
83. $x = -10$
84. $x = 3$
85. $x = \frac{9}{4}$
86. $x = -\frac{13}{8}$
87. $x = 4$
88. $x = 6$
89. $x \approx -2.3$
90. All real numbers
91. No Solution
92. $x = -5$
93. $x = 6$
94. $y = 6$
95. $z = 107$
96. $x = 120$
97. All real numbers
98. $y = -2$
99. $w = 3$
100. No Solution