

SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER. Circle answers.  
TURN IN ALL WORKSHEETS. CALCULATORS ARE RECOMMENDED ON THIS TEST.

In 1 - 4, evaluate the expressions:

1.  $5 \cdot (-11) - 8 \cdot (-3)$                       2.  $-2 [3 + 5(4)]$

3.  $\frac{4(3) - 3(-5)}{(-2)\sqrt{49} + 10}$

4.  $\frac{4(3) - 3(-5)}{(-2)\sqrt{49} + 14}$

In 5 - 10, solve for x:

5.  $6x - 4(3 - 2x) = 5(x - 4) - 10$

6.  $6x - 4(3 - 2x) = 4(x - 2) - 2(2 - 5x)$

7.  $aX + b = -cX + d$

8.  $V = \frac{1}{3} X h$

9.  $|2x + 3| = 17$

10.  $|x - 4| = -2$

In 11 - 19, solve for  $x$ , graph on a numberline, and give answers in interval notation.

11.  $-2x+6 \leq -4$

12.  $-3 < \frac{2x-5}{3} < 1$

13.  $-2 \leq 4 - x \leq 2$

14a)  $X \geq -2$  and  $X \geq 3$

15a)  $X \leq -4$  and  $X > -2$

b)  $X \geq -2$  or  $X \geq 3$

b)  $X \leq -4$  or  $X > -2$

In 16 - 18, use a calculator. Give scientific notation or round to nearest hundredth.

16.  $\sqrt[3]{123456}$

17.  $\sqrt[5]{123456}$

18.  $\frac{7.2 \times 10^{12}}{8.1 \times 10^{-14}}$

In 19 - 20, simplify according to laws of exponents.

19.  $\frac{(x^2 x^4)^3}{x^{20}}$

20.  $\frac{x^{3a} x^{2b}}{x^{3c}}$

In 21 - 22, multiply:

21.  $(5x + 2y)^2$

22.  $[(5x + 2y) - 5][(5x + 2y) - 4]$

In 23 - 25, an equation is required. Show all work!!

23. The width of a rectangle is 90 less than the length. If the perimeter is 1280 cm, find the length and width.

24. Dr. H. invested \$17,000, some at 7%, and the rest at 10%. If her total income for the year was \$1610, how much was invested at each rate?

25. How much 70% alcohol solution must be mixed with 80 liters of 40% solution to obtain a solution that is 60% alcohol?

INTERMEDIATE ALG EXAM LC SOLUTIONS

1.  $5(-1) - 8 \cdot (-3)$   
 $= -5 + 24$   
 $= -31$

2.  $-2[3 + 5(4)]$   
 $= -2[3 + 20]$   
 $= -2(23) = -46$

3.  $\frac{4(3) - 3(-5)}{(-2)\sqrt{49} + 10}$   
 $= \frac{12 + 15}{-14 + 10} = \frac{27}{-4}$

4.  $\frac{4(3) - 3(-5)}{-2\sqrt{49} + 14}$   
 $= \frac{27}{0} = \text{Undefined}$

5.  $6x - 4(3 - 2x) = 5(x - 4) - 10$   
 $6x - 12 + 8x = 5x - 20 - 10$   
 $14x - 12 = 5x - 30$   
 $9x = -18$   
 $x = -2$

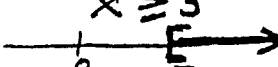
6.  $6x - 4(3 - 2x) = 4(x - 2) - 2(2 - 5x)$   
 $6x - 12 + 8x = 4x - 8 - 4 + 10x$   
 $14x - 12 = 14x - 12$   
 $0 = 0$  Identity  
 All Real  $x$

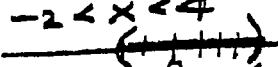
7.  $ax + b = cx + d$   
 $+cx - b + cx - b$   
 $ax + cx = d - b$   
 $x(a+c) = d-b$   
 $x = \frac{d-b}{a+c}$

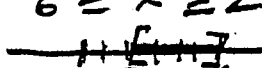
8.  $3V = \frac{1}{h}xh$   
 $\frac{3V}{h} = \frac{xh}{h}$   
 $\frac{3V}{h} = x$

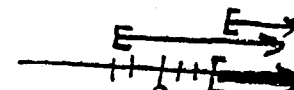
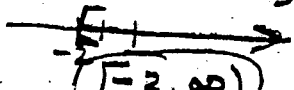
9.  $|2x + 3| = 17$   
 $2x + 3 = 17$     $2x + 3 = -17$   
 $2x = 14$     $2x = -20$   
 $x = 7$     $x = -10$

10.  $|x - 4| = -2$   
 No Solution

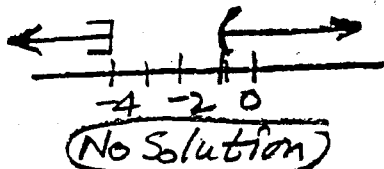
11.  $-2x + 6 \leq -4$   
 $-2x \leq -10$   
 $x \geq 5$   
  
 $[5, \infty)$

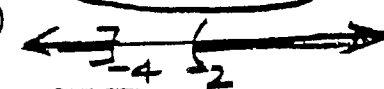
12.  $-3 < \frac{2x-5}{8} < 1$   
 $-9 < 2x-5 < 8$   
 $+5$     $+5$     $+5$   
 $-\frac{4}{2} < \frac{2x}{2} < \frac{13}{2}$   
 $-2 < x < 6.5$   
  
 $(-2, 6.5)$

13.  $-2 \leq 4 - x \leq 2$   
 $-\frac{4}{-1} \leq \frac{-x}{-1} \leq \frac{2}{-1}$   
 $6 \geq x \geq 2$   
  
 $[2, 6]$

14a)  $x \geq -2$  and  $x \geq 3$   
  
 $[3, \infty)$   
 b)  $x \geq -2$  or  $x \geq 3$   
  
 $[-2, \infty)$

15a)  $x \leq -4$  and  $x > -2$



b)  $x \leq -4$  or  $x > -2$   
  
 $(-\infty, -4] \cup (-2, \infty)$

16-18, use calculator

16. 49.79

17. 10.43

18.  $8.89 \times 10^{25}$

19.  $\frac{(x^2 \cdot x^4)^3}{x^{20}}$   
 $\frac{(x^6)^3}{x^{20}}$   
 $\frac{x^{18}}{x^{20}} = \frac{1}{x^2}$

20.  $\frac{x^{3a} \cdot x^{2b}}{x^{5c}}$   
 $= \frac{3a+2b-5c}{x}$

21.  $(5x+2y)^2 = 25x^2 + 20xy + 4y^2$

22.  $[(5x+2y)-5][(5x+2y)-4]$   
 $= (5x+2y)^2 - 9(5x+2y) + 20$   
 $= 25x^2 + 20xy + 4y^2 - 45x - 18y + 20$

23. Let  $x = \text{length}$   
 $x - 90 = \text{width}$   
 $2x + 2(x - 90) = 1280$   
 $4x - 180 = 1280$   
 $4x = 1460$   
 $x = 365 \text{ cm}$   
 $x - 90 = 275 \text{ cm}$

25. Amt % Pure

70%	$x$	.70	.70x
40%	80	-.40	.40(80)
60%	$x+80$	.60	.60(x+80)

$.70x + 32 = .60(x+80)$   
 $.70x + 32 = .60x + 48$   
 $.10x = 16$   
 $x = 160 \text{ L}$

24.

	P	R	I
7%	$x$	.07	.07x
10%	$17000 - x$	-.10	.10(17000 - x)
			1610

$.07x + .10(17000 - x) = 1610$   
 $.07x + 1700 - .10x = 1610$   
 $-.03x = -90$   
 $x = 3000$   
 $x = 3000 @ 7\%$   
 $17000 - x = 14000 @ 10\%$