

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

In 1 - 4, evaluate the expressions: (3 pts each part)

1. $20 - 5 \cdot 0$

2. $-8^2 + 6^2$

3. $(16 - 10)^2 \div 4 \cdot 3$

4. $|-5| - 3 \cdot |-8|$

5. $\frac{(11-5)^2 + 3 \cdot 2^2}{(5-3)^2 + 4(7-2)}$

6. $\frac{18}{18-2 \cdot 3}$

7a) $\sqrt{8500}$

8a) $\frac{72,000^2}{\sqrt{0.045}}$

b) $\sqrt[3]{8500}$

b) $\frac{8.3 \times 10^{-23} \cdot 9.5 \times 10^4}{7.5 \times 10^{12} \cdot 4.3 \times 10^{-6}}$

c) $\sqrt[5]{8500}$

9. Simplify according to the laws of exponents. Express without negative exponents.

a) $3x^{-2}$

b) $\frac{x^{-6} \cdot x^{-8}}{x^{-12}}$

c) $\frac{2^{6a}}{2^{a-2}}$

In 10 - 13, solve for x : (4 pts each)

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

11. $4x - (6 - 2x) = 6(x - 2) + 6$

12. $|2x - 9| = -3$

13. $|2x - 9| = 3$

In 14 - 17, solve for x , graph on a numberline, and give answers in interval notation.

14. $-3x + 6 \leq -6$

15. $-1 < \frac{3-x}{3} \leq 5$

16a) $x > -6$ and $x \leq 3$

17a) $x \geq -4$ and $x > 2$

b) $x > -6$ or $x \leq -3$

b) $x \geq -4$ or $x > 2$

18. $(2x - 5y)^2$

19. $[(2x - 5y) - 6][(2x - 5y) + 8]$

In 20 - 22, an equation is required. Show all work!!

20. A box contains nickels, dimes, and quarters worth a total of \$13.60. The number of dimes is 2 less than three times the number of nickels, and the number of quarters is twice the number of dimes. How many of each coin are there?

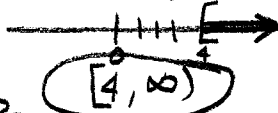
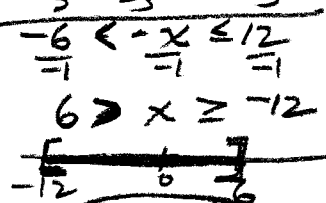
21. A woman invests \$8,000 in two accounts, some at 6% and the rest at 4%. If the total interest earned in one year is \$392, how much was invested at each rate?

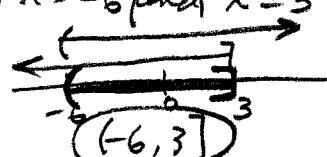
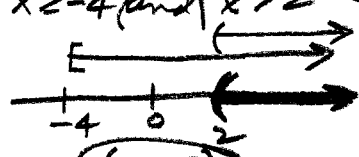
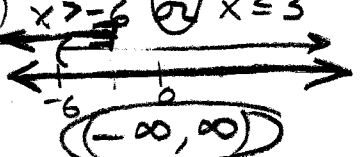
22. How much pure acid solution must be added to 60 liters of 20% acid solution in order to create an 80% solution?

INTERMEDIATE ALGEBRA EXAM 1 Solutions

1. $20 - 5 \cdot 0 = 20$
 $20 - 0 = 20$
2. $-8^2 + 6^2 = -64 + 36 = -28$
3. $(16-10)^2 \div 4 \cdot 3 = 6^2 \div 4 \cdot 3 = 36 \div 4 \cdot 3 = 9 \cdot 3 = 27$
4. $|-5| - 3 \cdot |-8| = 5 - 3 \cdot 8 = 5 - 24 = -19$
5. $\frac{(11-5)^2 + 3 \cdot 2^2}{(5-3)^2 + 4(7-2)} = \frac{6^2 + 3 \cdot 2^2}{2^2 + 4 \cdot 5} = \frac{36 + 12}{4 + 20} = \frac{48}{24} = 2$
6. $\frac{18}{18-2 \cdot 3} = \frac{18}{18-6} = \frac{18}{12} = \frac{3}{2}$
- 7a) $\sqrt{8500} = 92.20$
 b) $\sqrt[3]{8500} = 20.41$
 c) $\sqrt[5]{8500} = 6.11$
- 8a) $\frac{72000^2}{\sqrt{.045}} \approx 2.44 \times 10^{10}$
 b) $\frac{(8.3E-23 \times 9.5E4)}{(7.5E12 \times 4.3E-6)} \approx 2.44 \times 10^{-25}$
- 9a) $3x^{-2} = \frac{3}{x^2}$

- 9b) $\frac{x^{-6} \cdot x^{-8}}{x^{-12}} = x^{-14 - (-12)} = x^{-2} = \frac{1}{x^2}$
- 9c) $\frac{2^{6a}}{2^{a-2}} = 2^{6a-a+2} = 2^{5a+2}$
10. $4x - 2(2-2x) = 6x - 2$
 $4x - 4 + 4x = 6x - 2$
 $8x - 4 = 6x - 2$
 $2x = 2$
 $x = 1$
11. $4x - (6-2x) = 6(x-2) + 6$
 $4x - 6 + 2x = 6x - 12 + 6$
 $6x - 6 = 6x - 6$
 True for all x
 Identity

12. $|2x-9| = -3$ (No Solution)
13. $|2x-9| = 3$
 $2x-9 = 3 \Rightarrow 2x = 12 \Rightarrow x = 6$
 $2x-9 = -3 \Rightarrow 2x = 6 \Rightarrow x = 3$
14. $-3x + 6 \leq -6$
 $-3x \leq -12$
 $x \geq 4$

15. $3(-1) < \frac{3-x}{2} \leq 3$
 $-3 < \frac{3-x}{2} \leq 3$
 $-6 < 3-x \leq 6$
 $-9 < -x \leq 3$
 $9 > x \geq -3$


- 16a) $x > -6$ and $x \leq 3$

 (-6, 3]
- 17a) $x \geq -4$ and $x > 2$

 (2, infinity)
- b) $x > -6$ or $x \leq 3$

 (-infinity, infinity)
18. $(2x-5y)^2 = 4x^2 - 20xy + 25y^2$
19. $[2x-5y-6][2x-5y+8]$
 $(2x-5y)^2 + 2(2x-5y) - 48$
 $4x^2 - 20xy + 25y^2 + 4x - 10y - 48$

20. No Coins EA VALUES

N	x	5	5(x)
D	3x-2	10	10(3x-2)
Q	2(3x-2)	25	25(6x-4)
			1360

$5x + 10(3x-2) + 25(6x-4) = 1360$
 $5x + 30x - 20 + 150x - 100 = 1360$
 $185x - 120 = 1360$
 $185x = 1480$
 $x = 8$
 $3x-2 = 22 \Rightarrow N = 22$
 $6x-4 = 44 \Rightarrow Q = 44$

21. P R T

6%	x	.06	.06x
4%	8000-x	.04	.04(8000-x)
			392

$.06x + .04(8000-x) = 392$
 $.06x + 320 - .04x = 392$
 $.02x = 72$
 $x = 3600 @ 6%$
 $8000-x = 4400 @ 4%$

22. No liters % PURE

Pure	x	1.00	1.00(x)
20%	60	.20	.20(60)
80%	x+60	.80	.80(x+60)

$1.00x + .20(60) = .80(x+60)$
 $1.00x + 12 = .80x + 48$
 $.20x = 36$
 $x = 180L$