



# Pre-Algebra Final Exam Solutions

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# Pre-Algebra Final Exam Answer Key

1. (5 pts)      

A	<div style="background-color: black; width: 20px; height: 20px;"></div>	C	D	E
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2. (5 pts)      

<div style="background-color: black; width: 20px; height: 20px;"></div>	B	C	D	E
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3. (5 pts)      

A	<div style="background-color: black; width: 20px; height: 20px;"></div>	C	D	E
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4. (5 pts)      

A	B	<div style="background-color: black; width: 20px; height: 20px;"></div>	D	E
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5. (5 pts)      

A	B	C	D	<div style="background-color: black; width: 20px; height: 20px;"></div>
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6. (5 pts)      

A	B	C	<div style="background-color: black; width: 20px; height: 20px;"></div>	E
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7. (5 pts)      

A	B	C	<div style="background-color: black; width: 20px; height: 20px;"></div>	E
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8. (5 pts)      

A	<div style="background-color: black; width: 20px; height: 20px;"></div>	C	D	E
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9. (15 pts)       $7.5 \times 10^2$
10. (15 pts)       $7\frac{13}{21}$
11. (15 pts)      \$0.45 per orange
12. (15 pts)       $\frac{5 + 3\sqrt{5}}{5}$



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1. B. A number is divisible by 4 if its last two digits are divisible by 4, and 12 is divisible by 4.
2. A.  $-|7 - 3 - 2| - |-5| = -2 - 5 = -7$
3. B. The GCF of 16 and 36 is 4 because the prime factorization of 16 is  $2 \cdot 2 \cdot 2 \cdot 2$  and the prime factorization of 36 is  $2 \cdot 2 \cdot 3 \cdot 3$ . Since they both share a factor of 2, which occurs twice in both list of prime factors, the GCF is  $2 \cdot 2 = 4$ .
4. C. To find the prime factorization of 84, start breaking it down into its factors until all factors are prime.

$$84 = 2 \times 42$$

$$84 = 2 \times 2 \times 21$$

$$84 = 2 \times 2 \times 3 \times 7$$

Now use exponents to represent the prime factorization as  $2^2 \cdot 3 \cdot 7$ .



5. E. To simplify  $14/36$ , find a common factor in both the numerator and denominator, then cancel the common factor.

$$\frac{14}{36} = \frac{2 \cdot 7}{2 \cdot 18} = \frac{7}{18}$$

6. D. Rewrite each fraction in terms of the common denominator, which is 24.

$$\frac{1}{2} - \frac{1}{8} + \frac{5}{24}$$

$$\frac{12}{24} - \frac{3}{24} + \frac{5}{24}$$

Then perform the addition and subtraction and simplify the answer.

$$\frac{9}{24} + \frac{5}{24} = \frac{14}{24} = \frac{2 \cdot 7}{2 \cdot 12} = \frac{7}{12}$$

7. D. Solve for  $x$  using cross multiplication.

$$\frac{5}{6x} = \frac{1}{12}$$

$$5 \cdot 12 = 1 \cdot 6x$$

$$60 = 6x$$

Divide by 6 on both sides.



$$10 = x$$

8. B. Simplify the radical  $\sqrt{20}$  and combine like terms.

$$8 + \sqrt{20} + 3\sqrt{5}$$

$$8 + \sqrt{4 \cdot 5} + 3\sqrt{5}$$

$$8 + 2\sqrt{5} + 3\sqrt{5}$$

$$8 + 5\sqrt{5}$$

9. Simplify the numerator first, then the denominator.

$$\frac{(2.5 \times 10^3)(6 \times 10^{-5})}{20 \times 10^{-5}}$$

$$\frac{(2.5 \times 6)(10^3 \times 10^{-5})}{20 \times 10^{-5}}$$

$$\frac{15 \times 10^{-2}}{20 \times 10^{-5}}$$

$$\frac{15 \times 10^{-2} \times 10^5}{20}$$

$$\frac{15 \times 10^3}{20}$$

$$0.75 \times 10^3$$



$$7.5 \times 10^2$$

10. To find the sum, add the whole numbers first, and then separately add the fractions. The LCD is 21.

$$5\frac{2}{7} + 2\frac{1}{3}$$

$$(5 + 2) + \left(\frac{2}{7} + \frac{1}{3}\right)$$

$$7 + \left(\frac{3}{3} \cdot \frac{2}{7} + \frac{1}{3} \cdot \frac{7}{7}\right)$$

$$7 + \left(\frac{6}{21} + \frac{7}{21}\right)$$

$$7\frac{13}{21}$$

11. Write a proportion to represent the unit cost, given that the cost of 5 oranges is \$2.25.

$$\frac{5 \text{ oranges}}{\$2.25} = \frac{1 \text{ orange}}{x}$$

Solve the proportion using cross multiplication.

$$5 \cdot x = 1 \cdot \$2.25$$



$$5x = \$2.25$$

Divide both sides by 5.

$$\frac{5x}{5} = \frac{\$2.25}{5}$$

$$x = \$0.45$$

So the unit cost is \$0.45 per orange.

12. Rationalize the denominator by multiplying both the numerator and denominator by  $\sqrt{5}$ .

$$\frac{3 + \sqrt{5}}{\sqrt{5}}$$

$$\frac{3 + \sqrt{5}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$$

$$\frac{3 \cdot \sqrt{5} + \sqrt{5} \cdot \sqrt{5}}{\sqrt{5} \cdot \sqrt{5}}$$

$$\frac{3\sqrt{5} + 5}{5}$$

$$\frac{5 + 3\sqrt{5}}{5}$$



