Pre-Algebra Final Exam Solutions

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Pre-Algebra Final Exam Answer Key

1. (5 pts)	A	B	■	D	E
2. (5 pts)	■	B	C	D	E
3. (5 pts)	A	B	■	D	E
4. (5 pts)	A	■	C	D	E
5. (5 pts)	A	B	C	■	E
6. (5 pts)	A	B	C	D	■
7. (5 pts)	A	B	C	D	■
8. (5 pts)	A	■	C	D	E

9. (15 pts) 13

10. (15 pts) $2 \cdot 2 \cdot 2 \cdot 17$

11. (15 pts) 72 inches

12. (15 pts) x^{5a+1}

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1. C. Money has decimal numbers that end at the hundredths place (terminating decimal) and it can be written as a fraction, therefore it's a rational number.

2. A. $7 \cdot 8 = 56$ and because we are multiplying a negative times a negative, the answer will be positive.

$$-7 \cdot -8 = 56$$

3. C. The LCM is $2 \cdot 2 \cdot 3 \cdot 5 = 60$.

The prime factorization of 12 is $2 \cdot 2 \cdot 3$ and the prime factorization of 10 is $2 \cdot 5$. Since they both share a factor of 2, the prime factorization of the LCM will be $2 \cdot 2 \cdot 3 \cdot 5$ (every factor of 12 and 10, but only count the factors they share once).

4. B. First change

$$1\frac{2}{3}$$

into an improper fraction (take the whole number, multiply it by the denominator and add it to the numerator).

$$\frac{1(3)+2}{3}=\frac{5}{3}$$

Multiply $5/3$ by the reciprocal of $11/6$ (flip the top and bottom).

$$\frac{5}{3}\cdot\frac{6}{11}$$

$$\frac{30}{33}$$

Reduce (divide both the top and bottom by 3).

$$\frac{10}{11}$$

5. D. Subtract by lining up the decimals and adding any necessary zeros at the end. If needed, be sure to borrow correctly.

$$5.630 - 3.125$$

$$2.505$$

But 2.505 isn't the correct answer since we were asked to round to the nearest hundredth. Since the number after the hundredths place is a 5 we'll round 0 up to 1 and the correct answer is 2.51.

6. E. Solve by cross multiplying.

$$\frac{2}{5} = \frac{6}{x}$$

$$2x = 30$$

Divide both sides by 2.

$$\frac{2x}{2} = \frac{30}{2}$$

$$x = 15$$

7. E. Combine like terms ($\sqrt{12} + 3\sqrt{12}$) and take the square root of 25.

$$\sqrt{12} + 3\sqrt{12} + \sqrt{25}$$

$$4\sqrt{12} + 5$$

Simplify $\sqrt{12} = \sqrt{4 \cdot 3} = \sqrt{4} \cdot \sqrt{3} = 2\sqrt{3}$.

$$4 \cdot 2\sqrt{3} + 5$$

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

8. B. First rewrite everything in scientific notation.

$$\frac{(0.04 \times 10^4)(300{,}000)}{(15{,}000)(0.00002)}$$

$$\frac{(4 \times 10^2)(3 \times 10^5)}{(1.5 \times 10^4)(2 \times 10^{-5})}$$

Use the product rule to simplify the top and bottom (multiply the numbers together and add the exponents.

$$\frac{12 \times 10^7}{3 \times 10^{-1}}$$

Use the quotient rule to divide (divide the numbers and subtract the exponents).

$$4 \times 10^8$$

9. Subtract 8 from -5.

$$|-5-8|$$

$$|-13|$$

Take the absolute value (what is the distance from 0 and remember that distance is positive).

$$|-13|$$

$$13$$

10. Since 136 is even, start by dividing by 2.

$$136$$

$$2 \cdot 68$$

$$2 \cdot 2 \cdot 34$$

$$2 \cdot 2 \cdot 2 \cdot 17$$

When all the factors are prime you have found the prime factorization.

11. First convert yards into feet by multiplying by $\frac{3 \text{ ft}}{1 \text{ yd}}$.

$$\frac{2 \text{ yd}}{1} \cdot \frac{3 \text{ ft}}{1 \text{ yd}}$$

6 feet

Notice that the unit of yards cancels. Convert feet into inches by multiplying by $\frac{12 \text{ in}}{1 \text{ ft}}$.

$$\frac{6 \text{ ft}}{1} \cdot \frac{12 \text{ in}}{1 \text{ ft}}$$

72 inches

12. Use the power rule to simplify the top (multiply $2a$ by 3).

$$\frac{(x^{2a})^3}{x^{a-1}}$$

$$\frac{x^{6a}}{x^{a-1}}$$

Use the quotient rule (subtract $a - 1$ from $6a$).

$$x^{6a-(a-1)}$$

$$x^{6a-a+1}$$

$$x^{5a+1}$$

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