Math 19 – Exam 2 Name Key

1. A notebook costs $2.39. What is the cost of 5 notebooks?

$2.39 × 5 = $11.95 → $11.95

2. Simplify: $0.1(3 - 2.8) - (0.3)^2$

$0.1(0.2) - (.09)$

$3.0 - 2.8 = 0.2$ $\quad .3 \times .3 = .09$

$.02 - .09$

$= -.07$

3. Convert $8\frac{6}{11}$ to a decimal and round to the nearest hundredth.

whole $= 8.56$

$\frac{6}{11} \rightarrow 11\overline{)6.0}$ $\quad 0.55$ $\quad \rightarrow 0.56$

4. Siri's homework scores are 7.5, 10, 0, 8.5, and 3

a) What is the median of these scores?

0 3 (7.5) 8.5 10

Middle → median

b) What is the average (mean) of these scores, to the nearest tenth?

Main

$\frac{0+3+7.5+8.5+10}{5} = \frac{29}{5}$

$= 5.8$

Scratch →

$5\overline{)29.0}$ $\quad 5.8$

25

40

0.0
3.0
7.5
8.5
10.5
29.0

5. Solve: $0.4x + 3.6 = 9.0$

$-3.6 \quad -3.6$

$0.4x = 5.4$

$\frac{0.4x}{0.4} = \frac{5.4}{0.4}$

$x = \frac{5.4}{0.4} = \frac{54}{4} = 13.5$

$4\overline{)54.0}$ → 13.5

4

14

12

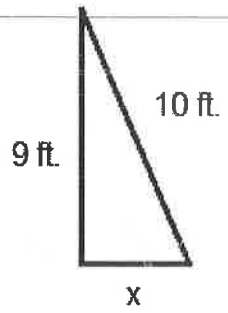
20

20

0

6. Using the triangle below:

a) Find the length of the unknown side, leaving your answer as a radical.



$x^2 + 9^2 = 10^2$

$x^2 + 81 = 100$

$x^2 = 19$; $x = \sqrt{19}$ ft

b) What 2 whole numbers does x fall between?

$\sqrt{16} < \sqrt{19} < \sqrt{25}$

4 and 5

7. A (circular) basketball hoop is 18 inches across. Find its circumference.

$C = \pi d = 3.14$

18

2512

314

5652 → 56.52 inches

8. If a 12-oz bag of chocolate chips costs $3.00, what is the unit price (to the nearest cent)?

$\frac{\$3.00}{12 \text{ oz}} = \$0.25/\text{oz}$

or 25¢/oz

$12\overline{)3.0}$ → 0.25

24

60

60

0

9. Find the ratio of 6 inches to 2 feet using the same units and writing in lowest terms.

$\frac{6\text{ in}}{2\text{ ft}} = \frac{6\text{ in}}{2(12\text{ in})} = \frac{6\text{ in}}{24\text{ in}} = \frac{1}{4}$

10. Meg drives 1200 miles on 40 gallons of gas. Write this as a unit rate.

$\frac{1200\text{ mi}}{40\text{ gal}} = 30\text{ mi/gal}$

11. Is the proportion $\frac{0.05}{1} = \frac{1}{20}$ a true proportion? Answer "yes" or "no" and show work for full credit.

$(.05)(20) \stackrel{?}{=} (1)(1)$

$1.0 = 1$ yes

$.05 \times 20 = 100$

12. Solve the proportion: $\frac{24}{x} = \frac{90}{12}$

$\frac{90 \div 6}{12 \div 6} = \frac{15}{2}$

$\frac{24 \div 3}{x} = \frac{15 \div 3}{2}$

$\frac{8}{x} = \frac{5}{2}$

$5x = 2 \cdot 8 = 16$

$x = \frac{16}{5} = 3\frac{1}{5} = 3.2$ ← all ok

13. a) Convert 8.5% to decimal format (without a percent symbol or fractions)

.085

b) Convert 8.5% to fraction format (without a percent symbol or decimals

$\frac{8.5}{100} = \frac{85 \div 5}{1000 \div 5} = \frac{17}{200}$

base

14. At the DMV, there are 35 people in line. If 80% of the people in line have waited more than 20 minutes, how many people have waited more than 20 minutes?

$A = P \cdot B$

$A = .8(35) = 28$ people

$$\begin{array}{r} 35 \\ \times\ .8 \\ \hline 28.0 \end{array}$$

15. Shoes which originally cost \$60 are on sale for \$42.

a) What is the amount of decrease?

$$\begin{array}{r} 60 \\ -\ 42 \\ \hline \$18 \end{array}$$ decrease

b) What is the percent decrease?

$$P = \frac{A}{B} = \frac{18}{60} \begin{matrix} \div 6 \\ \div 6 \end{matrix} = \frac{3}{10} = \frac{30}{100} = 30\%$$

16. Find the volume of a box whose dimensions are 10 cm X 14 cm X 20 cm.

$V = (10\text{ cm})(14\text{ cm})(20\text{ cm})$

$= 2800\text{ cm}^3$

17. If it costs \$20 for 6 gallons of gas, how much will it cost to fill a 15-gallon tank?

$$\frac{\$}{\text{gal}} \quad \frac{20}{6} = \frac{x}{15}$$

$$\frac{10}{1} \cancel{\frac{20}{2}} = \frac{x}{5}$$

$1 \cdot x = 5 \cdot 10$

$x = \$50$

18. On a test of 40 questions, Ray missed 6 problems. What percent were correct?

$40 - 6 = 34$ correct

$P = \frac{34}{40} = .85$

$= 85\%$

$40\overline{)34.00}$ → 0.85, 32, 20

19. A restaurant bill is $52. For a 15% tip, how much should be left?

$A = P \cdot B$

$A = (.15)\,52$

$52 \times .15$

260

52

7.80

$\$7.80$

20. If $300 is borrowed on a credit card at 24% interest; no payments are due for 2 years.

a) How much interest is owed after 2 years?

$I = P \cdot r \cdot t = (300)(.24)(2)$

$= (72)(2) = \$144$

$.24 \times 300 = 72.00$

b) What is the total (including principal) owed after 2 years?

$300 + 144$

$\$444$