

Evaluate the expression in problems 1-10. Each of these is worth 2 points.

1. $-12(7) = -184$

6. $\frac{-4(25)}{-5} = \frac{-100}{-5} = 20$

2. $-20 - (-6) = -14$
 $-20 + 6$

7. $-11^2 = -121$
 $-(11)(11)$

3. $13 + (-8) = 5$
 $13 - 8$

8. $7 - 9(3 - 8) = 52$
 $7 - 9(-5)$
 $7 + 45$

4. $-56 \div (7) = -8$

9. $\frac{12 - (-3)}{-1 + (-2)} = -5$
 $\frac{12 + 3}{-1 - 2} = \frac{15}{-3}$

5. $7 - 11 + 2 - 6 - 5 = -13$
 $-4 + 2 - 6 - 5$
 $-2 - 6 - 5$
 $-8 - 5$

10. $\frac{20 - 3\sqrt{16}}{4} = 4$
 $\frac{20 - 3(4)}{4} = \frac{20 - 12}{4} = \frac{8}{4} = 2$

For the rest of the exam, problems are worth 5 points each

11. Compute

(a) $401,108 - 387,119$

$$\begin{array}{r} 401,108 \\ - 387,119 \\ \hline 13,989 \end{array}$$

$13,989$

(b) $2748 \div 12 = 229$

$$\begin{array}{r} 229 \\ 12 \overline{) 2748} \\ \underline{-24} \\ 34 \\ \underline{-24} \\ 108 \end{array}$$

12. Compute and express the result in lowest terms

(a) $\frac{3}{16} + \frac{1}{10} = \frac{15}{80} + \frac{8}{80} = \frac{23}{80}$

LCD (16, 10) = 80

(b) $\frac{18}{5} \div \frac{15}{2} = \frac{12}{25}$
 $\frac{18}{5} \cdot \frac{2}{15} = \frac{12}{25}$

13. List the following fractions in order from smallest to largest: $\frac{3}{4}, \frac{7}{9}, \frac{4}{5}$

I compare like fractions

LCD(4, 9, 5) = 180

$$\frac{3}{4} = \frac{135}{180}, \quad \frac{7}{9} = \frac{140}{180}, \quad \frac{4}{5} = \frac{144}{180}$$

II compare decimals

$$\frac{3}{4} = .75$$

$$\frac{7}{9} \approx .77$$

$$\frac{4}{5} = \frac{8}{10} = .8$$

$$\begin{array}{r} .77 \\ 9 \overline{) 7.00} \\ \underline{-63} \\ 70 \\ \underline{-63} \\ 7 \end{array}$$

14. Compute and express the result as a mixed number

(a) $6\frac{1}{9} - 2\frac{3}{5} = 6\frac{5}{45} - 2\frac{27}{45}$

LCD(9, 5) = 45

$$\begin{array}{r} 6\frac{5}{45} \\ - 2\frac{27}{45} \\ \hline 3\frac{23}{45} \end{array}$$

BORROW!

(b) $5\frac{2}{3} \times 3\frac{3}{5}$

$$\frac{17}{3} \times \frac{18}{5} = \frac{102}{5} = 20\frac{2}{5} \text{ or } 20.4$$

$$\begin{array}{r} 20 \\ 5 \overline{) 102} \\ \underline{-10} \\ 2 \end{array}$$

15. Solve the proportion: $\frac{5}{12} = \frac{x}{18}$

$$12x = 5 \cdot 18 \rightarrow 12x = 90 \rightarrow \frac{12x}{12} = \frac{90}{12} \rightarrow x = 7\frac{6}{12} = 7\frac{1}{2} \text{ or } 7.5$$

$$\begin{array}{r} 7 \\ 12 \overline{) 90} \\ \underline{-84} \\ 6 \end{array}$$

16. Find:

(a) The GCF of {120, 50} = 2 · 5 = 10

$$120 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$$

$$50 = 2 \cdot 5 \cdot 5$$

SHARED FACTORS

(b) The LCM of {12, 30} = 2 · 2 · 3 · 5 = 60

$$12 = 2 \cdot 2 \cdot 3$$

$$30 = 2 \cdot 3 \cdot 5$$

12, now
add primes
missing from 30's
list

17. Compute

(a) 9.4×8.18

$$\begin{array}{r} 8.18 \\ \times 9.4 \\ \hline 3272 \\ + 73620 \\ \hline 76.892 \end{array}$$

$$76.892$$

(b) $6.912 \div .16$

$$.16 \overline{) 6.912} \rightarrow 16 \overline{) 691.2} \rightarrow 43.2$$

$$\begin{array}{r} 43.2 \\ 16 \overline{) 691.2} \\ \underline{-640} \\ 51 \\ \underline{-48} \\ 32 \\ \underline{-32} \\ 0 \end{array}$$

18. A 90 mile trip requires 5 gallons of gas. How many miles can I drive on 12 gallons? Give your answer as a decimal. If necessary, round to the nearest tenth of a gallon.

$$\frac{\text{miles}}{\text{gallons}} \quad \frac{90 \text{ m}}{5 \text{ g}} = \frac{x \text{ m}}{12 \text{ g}} \rightarrow \frac{90}{5} = \frac{x}{12} \rightarrow 5x = 12 \cdot 90 \rightarrow \frac{5x}{5} = \frac{1080}{5}$$

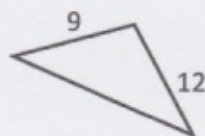
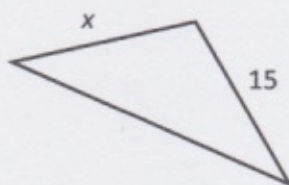
$$\begin{array}{r} 12 \\ \times 90 \\ \hline 1080 \end{array}$$

$$x = 216 \text{ gallons}$$

19. Express 0.4 as a percent

$$40\%$$

20. Given that the two triangles are similar. Find x.



$$\frac{\text{Big } \Delta}{\text{Little } \Delta} \quad \frac{x}{9} = \frac{15}{12} \rightarrow 12x = 9 \cdot 15$$

$$\frac{12x}{12} = \frac{135}{12} \quad x = \frac{135}{12} = 11 \frac{3}{4} = 11 \frac{1}{4}$$

or 11.25

21. What is 45% of 80. What is the number? If necessary round your answer to one decimal place.

Bottom

$$\frac{45}{100} = \frac{x}{80} \rightarrow 100x = 45 \cdot 80 \rightarrow 100x = 3600 \rightarrow x = \frac{3600}{100} = 36$$

OR

$$\frac{9}{20} = \frac{x}{80} \rightarrow 20x = 9 \cdot 80 = 720 \rightarrow x = \frac{720}{20} = 36$$

45
x 80
3600

22. In a class of 30 students 28 pass the final exam. What percentage pass the final exam?

% pass $\rightarrow \frac{P}{100} = \frac{28}{30} \rightarrow \frac{P}{100} = \frac{14}{15} \rightarrow 15P = 1400 \rightarrow P = \frac{1400}{15} = 93 \frac{5}{15}$

15) 1400
-1350
50
-45
5

93 $\frac{1}{3}$

or 93.3

23. Evaluate: $3x^2 - 2x - 1$, if $x = (-2)$

$$3(-2)^2 - 2(-2) - 1 =$$

$$3(-2)(-2) + 4 - 1 = 12 + 4 - 1 = 15$$

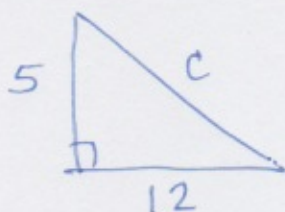
24. Given $A = \frac{7}{8}B - 28$, Find A, if $B = 72$

$$A = \frac{7}{8}(72) - 28 = \frac{7}{8} \cdot \frac{72}{1} - 28 = 36 - 28 = 8$$

25. Solve for x: $5x + 19 = -26$

$$\begin{array}{r} -19 \quad -19 \\ \hline 5x = -45 \\ \hline \frac{5x}{5} = \frac{-45}{5} \\ x = -9 \end{array}$$

26. Find the hypotenuse of a right triangle if the two legs measure 5 and 12.



$$5^2 + 12^2 = c^2$$

$$25 + 144 = c^2$$

$$169 = c^2$$

$$\sqrt{169} = \sqrt{c^2}$$

$$13 = c$$