

MAT 0012 Basic Algebra I

KEY CONCEPT REVIEW

CHAPTER 4, SECTIONS 4.5, 4.7 AND 4.8

TO RECEIVE CREDIT, DO ALL PROBLEMS, MAKE CORRECTIONS, AND SHOW ALL WORK.

- 1) Find the mistake in the calculation shown below.

$$\frac{7}{20} - \frac{5}{8} = \frac{2}{12} = \frac{1}{6}$$

Add or subtract. Write the answer in simplest form.

2) $-\frac{4}{9} - \frac{4}{5}$

3) $\frac{6}{11} - 2$

4) $-\frac{1}{2} + \frac{4}{3} - \frac{4}{5}$

A) $\frac{49}{30}$
C) $\frac{1}{30}$

B) $-\frac{1}{30}$
D) $-\frac{79}{30}$

5) $\frac{7y}{16} - \frac{5}{8}$

6) $\frac{1}{3} + \frac{1}{6} + \frac{d}{12}$

A) $\frac{2+d}{6}$

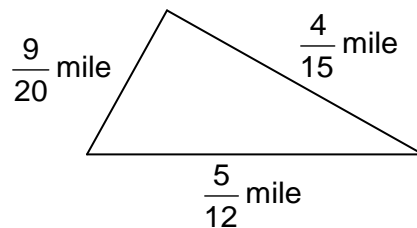
B) $\frac{6+d}{12}$

B) $\frac{d}{3}$

D) $\frac{3+d}{6}$

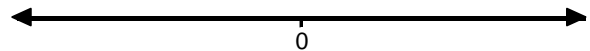
- 7) Evaluate $x + y$ for $x = -\frac{5}{7}$ and $y = \frac{2}{5}$.

- 8) Find the perimeter.



Graph each number on the number line.

9) $-\frac{3}{2}, -1, \frac{1}{2}, 2\frac{1}{4}$



- 10) Find the mistake in the calculation shown below.

$$5\frac{1}{3} \cdot 2\frac{3}{4} = 10\frac{3}{12} = 10\frac{1}{4}$$

Multiply. Where possible, write the answer as a mixed number in simplest form.

11) $2\frac{2}{9} \cdot \frac{3}{8}$

12) $4\frac{3}{4} - 4$

A) $-16\frac{3}{4}$

B) 19

C) 64

D) -19

Divide.

13) $-48 \div 1\frac{1}{2}$

14) $2\frac{1}{2} \div 5\frac{1}{8}$

A) $\frac{20}{41}$

B) $4\frac{2}{5}$

C) 2

D) $12\frac{13}{16}$

15) $1\frac{2}{5} \div -\frac{1}{4}$

16) Find the mistake in the calculation shown below.

$$4\frac{5}{9} + 3\frac{8}{9} = 7\frac{13}{9}$$

Add. Where possible, write the answer as a mixed number.

17) $4\frac{2}{7} + 1\frac{3}{14}$

18) $9\frac{1}{3} + 20\frac{4}{9} + \frac{3}{4}$

A) $31\frac{19}{36}$

B) $29\frac{19}{36}$

C) $30\frac{19}{36}$

D) $30\frac{1}{2}$

19) Which method can be used to subtract these fractions?

$$3\frac{2}{5} - 2\frac{4}{5}$$

A) Borrow a form of “1” from the whole number and add it to the fractional part.

B) Write each mixed number as an improper fraction.

Add. Where possible, write the answer as a mixed number.

20) $6\frac{1}{6} - 2\frac{2}{5}$

21) $16 - 9\frac{2}{3}$

A) $15\frac{1}{3}$

B) $7\frac{1}{3}$

C) $7\frac{2}{3}$

D) $6\frac{1}{3}$

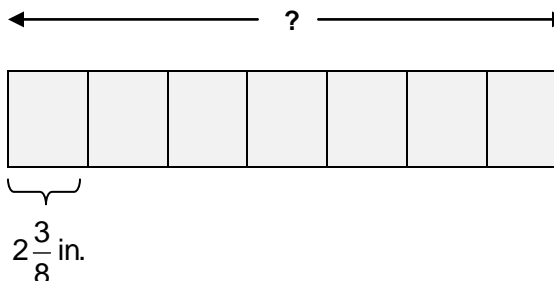
22) $2\frac{1}{8} - \frac{5}{6}$

Solve each problem. Write the answer as a mixed number in simplest form.

23) Kyle has $20\frac{2}{9}$ feet of rope. He cuts off lengths of $5\frac{1}{6}$ feet and $9\frac{2}{3}$ feet, will he have enough left to cut a 6-foot piece?

24) Mark is filling decorative oil lamps for a reception. Each lamp can hold $\frac{3}{5}$ cup of oil. How many lamps can he fill if he has $5\frac{2}{5}$ cups of oil.

25) A sidewalk is built seven bricks wide by laying each brick side by side. How many inches wide is the sidewalk if each brick measures $2\frac{3}{8}$ inches side?



26) In your own words, explain how to rewrite an equation that contains fractions.

Solve each equation.

$$27) y - \frac{5}{8} = -\frac{1}{24}$$

$$28) -\frac{5}{4}x = \frac{5}{20}$$

$$29) 4x - \frac{3}{4} - 3x = \frac{1}{8}$$

$$30) \frac{x}{4} - 8 = \frac{x}{2} + 2$$

A) -40 B) 40

C) $-\frac{5}{2}$ D) $\frac{5}{2}$

31) Find the error in the calculation shown below.

$$\begin{aligned}\frac{1}{3}x + 5 &= \frac{1}{4}x + \frac{2}{3} \\ 12 \cdot \left(\frac{1}{3}x\right) + 5 &= 12 \cdot \left(\frac{1}{4}x\right) + 12 \cdot \left(\frac{2}{3}\right) \\ 4x + 5 &= 3x + 8 \\ 4x + 5 - 3x &= 3x + 8 - 3x \\ x + 5 &= 8 \\ x + 5 - 5 &= 8 - 5 \\ x &= 3\end{aligned}$$