

Solution to Handout for Chapter 4 Form B

1. Perform the operation. $\frac{3}{4} - \frac{2}{5}$

$$\frac{3}{4} - \frac{2}{5} = \frac{3 \cdot 5}{4 \cdot 5} - \frac{2 \cdot 4}{5 \cdot 4} = \frac{15}{20} - \frac{8}{20} = \boxed{\frac{7}{20}}$$

To Find LCD:

$$4 = 2^2$$

$$5 = 5$$

$$LCD = 2^2 \cdot 5 = 4 \cdot 5 = 20$$

2. Perform the operation. $-\frac{3t}{5} \cdot \frac{4t}{27}$

$$-\frac{3t}{5} \cdot \frac{4t}{27} = -\frac{t}{5} \cdot \frac{4t}{9} = \boxed{-\frac{4t^2}{45}}$$

3. Perform the operation. $\frac{4}{3} \div (-4)$

$$\begin{aligned} & \frac{4}{3} \div (-4) \\ &= -\frac{4}{3} \div 4 \\ &= -\frac{4}{3} \cdot \frac{1}{4} \\ &= \boxed{-\frac{1}{3}} \end{aligned}$$

4. Simplify the fraction to the lowest form. $\frac{-8a^2}{24a}$

$$\frac{-8a^2}{24a} = \frac{-8a \cdot a}{24a} = \frac{-a}{3} = -\frac{a}{3} = \boxed{-\frac{1}{3}a}$$

5. Simplify the complex fraction. $\frac{\frac{1}{2} + \frac{2}{3}}{\frac{5}{6} - \frac{1}{3}}$

$$\frac{\frac{1}{2} + \frac{2}{3}}{\frac{5}{6} - \frac{1}{3}} = \frac{(\frac{1}{2} + \frac{2}{3}) \cdot 6}{(\frac{5}{6} - \frac{1}{3}) \cdot 6} = \frac{\frac{1}{2} \cdot 6 + \frac{2}{3} \cdot 6}{\frac{5}{6} \cdot 6 - \frac{1}{3} \cdot 6} = \frac{\frac{1}{2} \cdot 6 + \frac{2}{3} \cdot 6}{\frac{5}{6} \cdot 6 - \frac{1}{3} \cdot 6} = \frac{3+4}{5-2} = \frac{7}{3} = \boxed{2\frac{1}{3}}$$

6. Perform the operation. Write the answer as a mixed number.

$$\begin{aligned} & -3\frac{1}{3} + (-2\frac{3}{4}) \\ & \quad -3\frac{1}{3} = -3\frac{4}{12} \\ & +(-2\frac{3}{4}) = -2\frac{9}{12} \\ & \hline & \quad -5\frac{13}{12} = \boxed{-6\frac{1}{12}} \end{aligned}$$

$$-3\frac{1}{3} + (-2\frac{3}{4}) = -6\frac{1}{12}$$

7. Perform the operation.

$$5 \cdot (4\frac{2}{3}) = 5 \cdot \frac{14}{3} = \frac{70}{3} = \boxed{23\frac{1}{3}}$$

8. Simplify the fraction to the lowest term. $-\frac{75x^2}{50x^2y}$

$$-\frac{75x^2}{50x^2y} = \boxed{-\frac{3}{2y}}$$

9. Perform the operation. $(-\frac{2}{3})^3$

$$(-\frac{2}{3})^3 = (-\frac{2}{3})(-\frac{2}{3})(-\frac{2}{3}) = \boxed{-\frac{8}{27}}$$

10. Solve the equation. $\frac{5a}{6} - 2 = 8$

11. A football player signed a five-year contract for \$17\frac{1}{2} million. How much money

does this football player make per year in the 5 years?

$$17\frac{1}{2} \div 5 = \frac{35}{2} \div 5 = \frac{35}{2} \cdot \frac{1}{5} = \frac{7}{2} \cdot \frac{1}{1} = \frac{7}{2} = 3\frac{1}{2}$$

This football player makes $3\frac{1}{2}$ million per year in the 5 years.

12. Simplify the complex fraction. $\frac{\frac{y}{20}}{\frac{5y}{12}}$

$$\frac{\frac{y}{20}}{\frac{5y}{12}} = \frac{\frac{y}{20} \cdot 60}{\frac{5y}{12} \cdot 60} = \frac{3y}{5y \cdot 5} = \boxed{\frac{3}{25}}$$

To find the LCD:

$$20 = 2^2 \cdot 5$$

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

$$LCD = 2^2 \cdot 3 \cdot 5 = 60$$

13. Solve the equation. $\frac{x}{2} + \frac{x}{5} = -7$

One Method

$$\frac{x}{2} + \frac{x}{5} = -7$$

$$\frac{x \cdot 5}{2 \cdot 5} + \frac{x \cdot 2}{5 \cdot 2} = -7$$

$$\frac{5x}{10} + \frac{2x}{10} = -7$$

$$\frac{7x}{10} = -7$$

$$\frac{10}{7} \cdot \frac{7x}{10} = \frac{10}{7} \cdot (-7)$$

$$\boxed{x = -10}$$

Another method.

$$\frac{x}{2} + \frac{x}{5} = -7$$

$$10 \cdot \frac{x}{2} + 10 \cdot \frac{x}{5} = 10 \cdot (-7)$$

$$5x + 2x = -70$$

$$7x = -70$$

$$\frac{7x}{7} = \frac{-70}{7}$$

$$\boxed{x = -10}$$

14. Express the fraction as a mixed number or as a whole number. $-\frac{64}{5}$

$$-\frac{64}{5} = -12\frac{4}{5}$$

15. Evaluate the expression. $(\frac{1}{5} \div \frac{2}{3}) - (\frac{1}{3})^2$

$$(\frac{1}{5} \div \frac{2}{3}) - (\frac{1}{3})^2$$

$$= (\frac{1}{5} \cdot \frac{3}{2}) - \frac{1}{9}$$

$$= \frac{3}{10} - \frac{1}{9}$$

$$= \frac{3 \cdot 9}{90} - \frac{1 \cdot 10}{90}$$

$$= \frac{27}{90} - \frac{10}{90}$$

$$= \frac{17}{90}$$

16. Perform the operation. $\frac{7a}{6} \div \frac{14a}{16}$

$$\frac{7a}{6} \div \frac{14a}{16}$$

$$= \frac{7a}{6} \div \frac{7a}{8} \quad (\text{reduce the divisor first, optional.})$$

$$= \frac{7a}{6} \cdot \frac{8}{7a}$$

$$= \frac{1}{3} \cdot \frac{4}{1}$$

$$= \frac{4}{3} = 1\frac{1}{3}$$

17. Perform the operation. Write the answer as a mixed number.

$$5\frac{2}{5} - 2\frac{1}{3}$$

$$5\frac{2}{5} = 5\frac{2 \cdot 3}{15} = 5\frac{6}{15}$$

$$\frac{-2\frac{1}{3} = 2\frac{1\cdot 5}{15} = 2\frac{5}{15}}{\boxed{3\frac{1}{15}}}$$

That is, $5\frac{2}{5} - 2\frac{1}{3} = \boxed{3\frac{1}{15}}$

18. Perform the operation. $\frac{1}{5} - \frac{x}{7}$

$$\frac{1}{5} - \frac{x}{7} = \frac{1\cdot 7}{35} - \frac{x\cdot 5}{35} = \frac{7}{35} - \frac{5x}{35} = \boxed{\frac{7-5x}{35}}$$

19. Solve the equation. $3x - \frac{1}{3} = \frac{5}{4}$

One Method

$$3x - \frac{1}{3} = \frac{5}{4}$$

$$3x - \frac{1}{3} + \frac{1}{3} = \frac{5}{4} + \frac{1}{3}$$

$$3x = \frac{5}{4} + \frac{1}{3} = \frac{15}{12} + \frac{4}{12} = \frac{19}{12}$$

$$\frac{1}{3} \cdot 3x = \frac{1}{3} \cdot \frac{19}{12}$$

$$\boxed{x = \frac{19}{36}}$$

Another method.

$$3x - \frac{1}{3} = \frac{5}{4}$$

$$12 \cdot 3x - 12 \cdot \frac{1}{3} = 12 \cdot \frac{5}{4}$$

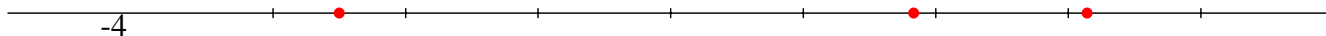
$$36x - 4 = 15$$

$$36x - 4 + 4 = 15 + 4$$

$$36x = 19$$

$$\boxed{x = \frac{19}{36}}$$

20. Graph. $\{-2\frac{1}{2}, 1\frac{5}{6}, 3\frac{1}{7}\}$



21. Solve the equation. $-\frac{3}{4}h = -5$

$$\left(-\frac{4}{3}\right) \cdot \left(-\frac{3}{4}\right)h = \left(-\frac{4}{3}\right) \cdot (-5)$$

$$h = \frac{4}{3} \cdot 5 = \frac{20}{3} = 6\frac{2}{3}$$

$$\boxed{h = 6\frac{2}{3}}$$

22. Perform the operation. $-2ab\left(\frac{3}{8a^2}\right)$

$$-2ab\left(\frac{3}{8a^2}\right) = -2ab\left(\frac{3}{8a\cdot a}\right) = -b\left(\frac{3}{4a}\right) = \boxed{-\frac{3b}{4a}}$$

23. Evaluate the expression. $a^2 + 2ab$ for $a = -\frac{1}{3}$ and $b = \frac{2}{3}$

$$a^2 + 2ab$$

$$= \left(-\frac{1}{3}\right)^2 + 2\left(-\frac{1}{3}\right)\frac{2}{3}$$

$$= \left(-\frac{1}{3}\right)\left(-\frac{1}{3}\right) - \frac{4}{9}$$

$$= \frac{1}{9} - \frac{4}{9} = -\frac{3}{9} = -\frac{1}{3}$$

24. Perform the operation. $-\frac{10}{3}(-3\frac{4}{5})$

$$\begin{aligned} & -\frac{10}{3}(-3\frac{4}{5}) \\ &= \frac{10}{3}(3\frac{4}{5}) \quad \text{The result is positive.} \\ &= \frac{10}{3} \cdot \frac{19}{5} \\ &= \frac{2}{3} \cdot \frac{19}{1} \\ &= \frac{38}{3} = 12\frac{2}{3} \end{aligned}$$

25. Express the mixed number as an improper fraction. $6\frac{2}{5}$

$$6\frac{2}{5} = \frac{32}{5}$$