Foundation GCSE: Multiplying & Dividing Fractions

Name: _____ Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Calculate $\frac{2}{3} \times \frac{4}{5}$.

2. Calculate $\frac{1}{4} \div \frac{1}{2}$.

3. Calculate $\frac{3}{5} \times \frac{10}{21}$.

4. Calculate $\frac{3}{4} \div \frac{9}{10}$.

5. Calculate $3 \times \frac{2}{7}$.

6. Calculate $\frac{5}{8} \div 4$.

7. Calculate $1\frac{1}{3} \times \frac{3}{8}$.

8. Calculate $2\frac{1}{4} \div 1\frac{1}{2}$.

9. Calculate $\frac{4}{9} \times \frac{3}{8} \times \frac{6}{7}$.

10. Calculate $3\frac{1}{2} \times 2\frac{2}{5}$.

11. Calculate $\frac{7}{10} \div \frac{14}{15}$.

12. Calculate $5\frac{1}{4} \div 2\frac{1}{3}$.

13. Evaluate $\left(\frac{2}{3}\right)^3$.

14. Evaluate $\sqrt{\frac{16}{81}}$.

15. Find the area of a rectangle measuring $3\frac{1}{3}$ cm by $1\frac{3}{4}$ cm.

16. Calculate $\left(1\frac{1}{2}\right)^2 \div \frac{3}{8}$.

17. Find the missing fraction: $\frac{2}{3} \times x = \frac{8}{15}$.

18. Calculate $\frac{a^2}{b} \times \frac{b^3}{a}$, giving your answer in its simplest form.

19. A recipe requires $1\frac{1}{2}$ cups of flour to make 12 cakes. How much flour is needed to make 18 cakes?

20. Solve for x: $\left(\frac{2}{3}\right)^x = \frac{16}{81}$.

Answers & Worked Solutions

1. $\dfrac{8}{15}$

   Multiply numerators and denominators: 2×4 *and* 3×5.

2. $\dfrac{1}{2}$

   $\dfrac{1}{4}\times\dfrac{2}{1}=\dfrac{2}{4}=\dfrac{1}{2}$.

3. $\dfrac{2}{7}$

   Cancel diagonally: $\dfrac{3}{21}=\dfrac{1}{7}$ *and* $\dfrac{10}{5}=2$*, so* $\dfrac{1\times 2}{1\times 7}$.

4. $\dfrac{5}{6}$

   $\dfrac{3}{4}\times\dfrac{10}{9}=\dfrac{30}{36}=\dfrac{5}{6}$.

5. $\dfrac{6}{7}$

   $3\times\dfrac{2}{7}=\dfrac{3\times 2}{7}$.

6. $\dfrac{5}{32}$

   $\dfrac{5}{8}\times\dfrac{1}{4}=\dfrac{5}{32}$.

7. $\dfrac{1}{2}$

   $\dfrac{4}{3}\times\dfrac{3}{8}=\dfrac{12}{24}=\dfrac{1}{2}$.

8. $1\dfrac{1}{2}$

   $\dfrac{9}{4}\div\dfrac{3}{2}=\dfrac{9}{4}\times\dfrac{2}{3}=\dfrac{18}{12}=\dfrac{3}{2}=1\dfrac{1}{2}$.

9. $\dfrac{1}{7}$

   Cancel factors: $\dfrac{4}{8}=\dfrac{1}{2}$, $\dfrac{6}{9}=\dfrac{2}{3}$*, etc., simplifying to* $\dfrac{1}{7}$.

10. $8\dfrac{2}{5}$

    $\dfrac{7}{2}\times\dfrac{12}{5}=\dfrac{84}{10}=\dfrac{42}{5}=8\dfrac{2}{5}$.

11. $\dfrac{3}{4}$

    $\dfrac{7}{10}\times\dfrac{15}{14}=\dfrac{3}{4}$ *after cross-cancelling.*

12. $2\dfrac{1}{4}$

    $\dfrac{21}{4}\div\dfrac{7}{3}=\dfrac{21}{4}\times\dfrac{3}{7}=\dfrac{9}{4}=2\dfrac{1}{4}$.

13. $\dfrac{8}{27}$

    Cube both numerator and denominator.

14. $\dfrac{4}{9}$

    Square root of numerator and denominator.

15. $5\dfrac{5}{12}$ cm^2

    $\dfrac{10}{3}\times\dfrac{7}{4}=\dfrac{70}{12}=\dfrac{35}{6}=5\dfrac{5}{12}$.

16. 6

    $\left(\dfrac{3}{2}\right)^2=\dfrac{9}{4}$; $\dfrac{9}{4}\times\dfrac{8}{3}=\dfrac{72}{12}=6$.

17. $\dfrac{4}{5}$

    $x=\dfrac{8}{15}\div\dfrac{2}{3}=\dfrac{8}{15}\times\dfrac{3}{2}=\dfrac{4}{5}$.

18. ab^2

    $\dfrac{a^2b^3}{ab}=ab^2$.

19. $2\dfrac{1}{4}$ cups

    $1\dfrac{1}{2}\times\dfrac{18}{12}=\dfrac{3}{2}\times\dfrac{3}{2}=\dfrac{9}{4}=2\dfrac{1}{4}$.

20. $x=4$

    $\left(\dfrac{2}{3}\right)^4=\dfrac{16}{81}$.