Foundation GCSE: Adding & Subtracting 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 $\frac{2}{7} + \frac{3}{7}$.

2. Calculate $\frac{5}{9} - \frac{2}{9}$.

3. Calculate $\frac{1}{2} + \frac{1}{4}$.

4. Calculate $\frac{3}{5} - \frac{1}{10}$.

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

6. Calculate $\frac{4}{5} - \frac{2}{3}$.

7. Calculate $1\frac{1}{2} + 2\frac{1}{3}$.

8. Calculate $\frac{5}{6} + \frac{3}{8}$.

9. Calculate $3\frac{3}{4} - 1\frac{1}{2}$.

10. Calculate $\frac{7}{10} - \frac{3}{8}$.

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

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

13. Calculate $4\frac{1}{6} - 2\frac{3}{4}$.

14. Calculate $\frac{5}{12} + \frac{7}{18}$.

15. Evaluate $5 - 2\frac{3}{8}$.

16. Calculate $3\frac{2}{3} + 4\frac{4}{5} - 1\frac{1}{2}$.

17. Find the missing fraction: $\frac{3}{4} + x = 1\frac{1}{5}$.

18. Calculate $\frac{3}{x} + \frac{2}{x}$, writing your answer as a single fraction.

19. The perimeter of a triangle is 10 cm. Two of its sides measure $3\frac{1}{4}$ cm and $2\frac{3}{5}$ cm. Find the length of the third side.

20. Calculate and simplify fully: $\left(1 - \frac{1}{2}\right) + \left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{3} - \frac{1}{4}\right) + \cdots + \left(\frac{1}{9} - \frac{1}{10}\right)$.

Answers & Worked Solutions

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

   Add numerators: $2+3=5$.

2. $\dfrac{3}{9}=\dfrac{1}{3}$

   Subtract numerators: $5-2=3$, *simplify.*

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

   Convert $\dfrac{1}{2}$ *to* $\dfrac{2}{4}$, *then add* $\dfrac{1}{4}$.

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

   $\dfrac{6}{10}-\dfrac{1}{10}=\dfrac{5}{10}=\dfrac{1}{2}$.

5. $\dfrac{11}{12}$

   Common denominator 12*:* $\dfrac{8}{12}+\dfrac{3}{12}$.

6. $\dfrac{2}{15}$

   Common denominator 15*:* $\dfrac{12}{15}-\dfrac{10}{15}$.

7. $3\dfrac{5}{6}$

   Whole numbers: $1+2=3$*; fractions:* $\dfrac{3}{6}+\dfrac{2}{6}=\dfrac{5}{6}$.

8. $\dfrac{29}{24}=1\dfrac{5}{24}$

   Common denominator 24*:* $\dfrac{20}{24}+\dfrac{9}{24}$.

9. $2\dfrac{1}{4}$

   $3-1=2$, $\dfrac{3}{4}-\dfrac{2}{4}=\dfrac{1}{4}$.

10. $\dfrac{13}{40}$

    Common denominator 40*:* $\dfrac{28}{40}-\dfrac{15}{40}$.

11. $4\dfrac{3}{20}$

    $2+1=3$, $\dfrac{8}{20}+\dfrac{15}{20}=\dfrac{23}{20}=1\dfrac{3}{20}$, *total* $4\dfrac{3}{20}$.

12. $\dfrac{13}{12}=1\dfrac{1}{12}$

    Common denominator 12*:* $\dfrac{6}{12}+\dfrac{4}{12}+\dfrac{3}{12}$.

13. $1\dfrac{5}{12}$

    $\dfrac{25}{6}-\dfrac{11}{4}=\dfrac{50-33}{12}=\dfrac{17}{12}=1\dfrac{5}{12}$.

14. $\dfrac{29}{36}$

    Common denominator 36*:* $\dfrac{15}{36}+\dfrac{14}{36}$.

15. $2\dfrac{5}{8}$

    $4\dfrac{8}{8}-2\dfrac{3}{8}$.

16. $6\dfrac{29}{30}$

    $3+4-1=6$*; fractions:* $\dfrac{20}{30}+\dfrac{24}{30}-\dfrac{15}{30}=\dfrac{29}{30}$.

17. $\dfrac{9}{20}$

    $\dfrac{6}{5}-\dfrac{3}{4}=\dfrac{24-15}{20}=\dfrac{9}{20}$.

18. $\dfrac{5}{x}$

    Add numerators over common denominator x.

19. $4\dfrac{3}{20}$ cm

    $10-(3\dfrac{1}{4}+2\dfrac{3}{5})=10-5\dfrac{17}{20}=4\dfrac{3}{20}$.

20. $\dfrac{9}{10}$

    Telescoping series: $(1-\frac{1}{2})+(\frac{1}{2}-\frac{1}{3})+\ldots$ *leaves* $1-\frac{1}{10}=\frac{9}{10}$.