Challenge Sheet!! Converting Repeating Decimals into Fractions

Directions: Convert decimals into fractions and fractions into exact (repeating) decimals.

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

2. $\dfrac{37}{99}$

3. $\dfrac{13}{999}$

4. $\dfrac{2503}{9999}$

5. $\dfrac{7}{90}$

6. $\dfrac{37}{990}$

7. $\dfrac{37}{9900}$

8. $\dfrac{19}{9990000}$

9. 0.47

10. $0.\overline{47}$

11. $0.0\overline{47}$

12. $0.0\overline{47}$

13. $0.0000\overline{047}$

14. $0.\overline{1}$

15. $0.6\overline{5}$

16. $0.6\overline{51}$

17. $0.0\overline{07}$

18. 0.007

19. $0.00\overline{017}$

20. $0.8\overline{3}$
   (Hint: $0.8\overline{3} = 0.8 + 0.0\overline{3}$)

21. $0.80\overline{5}$

22. $0.31\overline{6}$

23. $0.1477\overline{2}$

24. $0.028\overline{4653}$

Answers

1. $0.\overline{7}$

2. $0.\overline{37}$

3. $0.0\overline{13}$

4. $0.2\overline{503}$

5. $0.0\overline{7}$

6. $0.0\overline{37}$

7. $0.00\overline{37}$

8. $0.00000\overline{19}$

9. $\frac{47}{100}$

10. $\frac{47}{99}$

11. $\frac{47}{990}$

12. $\frac{47}{999}$

13. $\frac{47}{9999000}$

14. $\frac{1}{9}$

15. $\frac{65}{99}$

16. $\frac{217}{333}$

17. $\frac{7}{999}$

18. $\frac{7}{900}$

19. $\frac{17}{99900}$

20. $\frac{5}{6}$

21. $\frac{29}{36}$

22. $0.31\overline{6}$

Solution: Separating the two parts, we know that 0.31 is $\frac{31}{100}$ and that $0.00\overline{6}$ is $\frac{6}{900}$ as a fraction. $0.31\overline{6}$ can therefore be written as $\frac{31}{100} + \frac{6}{900}$. Getting common denominators and adding these two fractions gives us $\frac{285}{900}$ which reduces to a final answer of $\frac{19}{60}$.

23. $0.147\overline{72}$

Solution: Separating the two parts, we know that 0.147 is $\frac{147}{1000}$ and that $0.000\overline{72}$ is $\frac{72}{99000}$ as a fraction (don't reduce it!). Getting common denominators and adding these two fractions gives us $\frac{14625}{99000}$ which reduces to a final answer of $\frac{13}{88}$.

24. $0.028\overline{4653}$

Solution: Separating the two parts, we know that 0.028 is $\frac{28}{1000}$ and that $0.000\overline{4653}$ is $\frac{4653}{9999000}$ as a fraction. Adding these two fractions gives us $\frac{284625}{9999000}$ which reduces (by dividing top and bottom by 25, then 5, then 9, and then 11) to a final answer of $\frac{23}{808}$.