

Ordering fractions: the five methods

Method	How	Fastest when	Example
1. Common denominator	Rewrite over the LCM; order the numerators	Denominators share factors	$\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{8}$ over 24: 16, 18, 15, so $\frac{5}{8} < \frac{2}{3} < \frac{3}{4}$
2. Same numerator	Smaller denominator = bigger fraction	Tops match (or can be made to)	$\frac{3}{5}$, $\frac{3}{8}$, $\frac{3}{4}$: $\frac{3}{8} < \frac{3}{5} < \frac{3}{4}$
3. Benchmarks	Compare each to 0, $\frac{1}{2}$ and 1	A rough order; mental maths	$\frac{1}{6}$ near 0; $\frac{4}{9}$ under half; $\frac{5}{8}$ over half; $\frac{7}{8}$ near 1
4. Decimals	Divide top by bottom; order decimals	Calculator allowed; awkward denominators; mixed with decimals and %	$\frac{5}{7} = 0.714$, $\frac{2}{3} = 0.667$, $\frac{7}{10} = 0.7$, $\frac{11}{16} = 0.6875$
5. Cross-multiply	Compare $a \times d$ with $c \times b$	Two fractions; checking	$\frac{5}{7}$ vs $\frac{7}{10}$: 50 vs 49, so $\frac{5}{7}$ is bigger

The harder cases

Mixed numbers: order by the whole number first; convert improper fractions to mixed. Negatives: order the sizes, then reverse ($-\frac{3}{4} < -\frac{1}{2} < -\frac{1}{4}$). Mixed with decimals and percentages: convert all to decimals. Greatest to least: read the list backwards, and underline which order the question wants.

The four mistakes

- [] Bigger numbers make a bigger fraction ($\frac{1}{8}$ is smaller than $\frac{1}{4}$)
- [] Changing the denominator without the numerator
- [] Comparing only tops or only bottoms of unlike fractions
- [] Reversing the order asked for

Twenty questions: order from least to greatest

1. $\frac{1}{4}$, $\frac{3}{4}$, $\frac{2}{4}$
2. $\frac{2}{5}$, $\frac{2}{9}$, $\frac{2}{3}$
3. $\frac{1}{2}$, $\frac{3}{8}$, $\frac{5}{8}$
4. $\frac{2}{3}$, $\frac{1}{2}$, $\frac{5}{6}$
5. $\frac{3}{10}$, $\frac{1}{4}$, $\frac{2}{5}$
6. $\frac{4}{5}$, $\frac{7}{10}$, $\frac{3}{4}$
7. $\frac{5}{12}$, $\frac{1}{3}$, $\frac{1}{2}$
8. $\frac{2}{7}$, $\frac{1}{3}$, $\frac{3}{8}$
9. $\frac{7}{9}$, $\frac{5}{6}$, $\frac{3}{4}$
10. $\frac{1}{6}$, $\frac{4}{9}$, $\frac{5}{8}$, $\frac{7}{8}$
11. $\frac{3}{5}$, $\frac{5}{8}$, $\frac{7}{12}$
12. $2\frac{1}{2}$, $1\frac{1}{4}$, $2\frac{2}{3}$, $3\frac{1}{8}$
13. $\frac{9}{4}$, $2\frac{1}{3}$, $\frac{7}{3}$
14. $-\frac{1}{2}$, $-\frac{3}{4}$, $-\frac{1}{4}$, $\frac{1}{3}$
15. $-\frac{2}{3}$, $-\frac{1}{6}$, $-\frac{5}{6}$
16. $\frac{3}{5}$, 0.55, 62%, $\frac{5}{8}$
17. 0.3, $\frac{1}{3}$, 30%, $\frac{3}{8}$
18. $\frac{5}{7}$, $\frac{2}{3}$, $\frac{7}{10}$, $\frac{11}{16}$
19. Greatest to least: $\frac{4}{9}$, $\frac{3}{7}$, $\frac{1}{2}$, $\frac{2}{5}$
20. Which is bigger, $\frac{13}{20}$ or $\frac{17}{25}$? Show the method

Answers

1) $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ 2) $\frac{2}{9}$, $\frac{2}{5}$, $\frac{2}{3}$ 3) $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ 4) $\frac{1}{2}$, $\frac{2}{3}$, $\frac{5}{6}$ 5) $\frac{1}{4}$, $\frac{3}{10}$, $\frac{2}{5}$ 6) $\frac{7}{10}$, $\frac{3}{4}$, $\frac{4}{5}$ 7) $\frac{1}{3}$, $\frac{5}{12}$, $\frac{1}{2}$ 8) $\frac{2}{7}$, $\frac{1}{3}$, $\frac{3}{8}$ 9) $\frac{3}{4}$, $\frac{7}{9}$, $\frac{5}{6}$ 10) $\frac{1}{6}$, $\frac{4}{9}$, $\frac{5}{8}$, $\frac{7}{8}$ 11) $\frac{7}{12}$, $\frac{3}{5}$, $\frac{5}{8}$ (over 120: 70, 72, 75) 12) $2\frac{1}{2}$, $2\frac{2}{3}$, $1\frac{1}{4}$, $3\frac{1}{8}$ 13) $\frac{9}{4} = 2\frac{1}{4}$, $2\frac{1}{3}$, $\frac{7}{3} = 2\frac{1}{3}$: $\frac{9}{4} < 2\frac{1}{3} = \frac{7}{3}$ 14) $-\frac{3}{4}$, $-\frac{1}{2}$, $-\frac{1}{4}$, $\frac{1}{3}$ 15) $-\frac{5}{6}$, $-\frac{2}{3}$, $-\frac{1}{6}$ 16) 0.55, $\frac{3}{5}$, 62%, $\frac{5}{8}$ 17) 0.3 = 30%, $\frac{1}{3}$, $\frac{3}{8}$ 18) $\frac{2}{3}$, $1\frac{1}{16}$, $\frac{7}{10}$, $\frac{5}{7}$ 19) $\frac{1}{2}$, $\frac{4}{9}$, $\frac{3}{7}$, $\frac{2}{5}$ 20) $\frac{17}{25}$ (0.68 vs 0.65; or over 100: 65 vs 68)

From

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