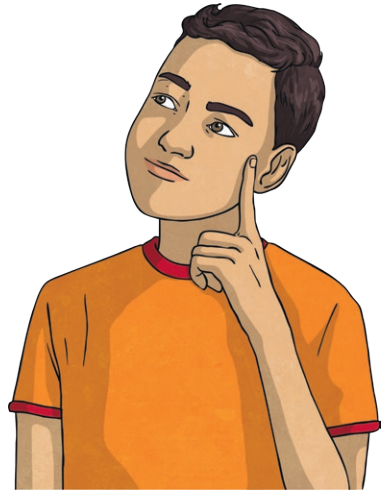
Year 6:

Order and Compare Fractions

Mastery Challenge Cards

1. Pavel has to compare these two fractions:

$$\frac{2}{5} \text{ and } \frac{4}{9}$$



Explain how Pavel might do this.

Try to find several ways to compare the fractions.

2. Nikita has to compare these two fractions:

$$\frac{9}{13} \text{ and } \frac{22}{30}$$

Explain how Nikita might do this.

Try to find several ways to compare the fractions.

3. George has to compare these two fractions:

$$\frac{8}{15} \text{ and } \frac{11}{23}$$

Explain how George might do this.

Try to find several ways to compare the fractions.

4. Pavel has to order these fractions from smallest to largest:

$$\frac{2}{5}, \quad \frac{2}{7}, \quad \frac{3}{10}$$

Explain how Pavel might do this.

Try to find several ways to compare the fractions.

5. Nikita has to order these fractions from smallest to largest:

$$\frac{5}{6}, \quad \frac{3}{4}, \quad \frac{2}{3}, \quad \frac{7}{9}$$

Explain how Nikita might do this.

Try to find several ways to compare the fractions.

6. George has to order these fractions from smallest to largest:

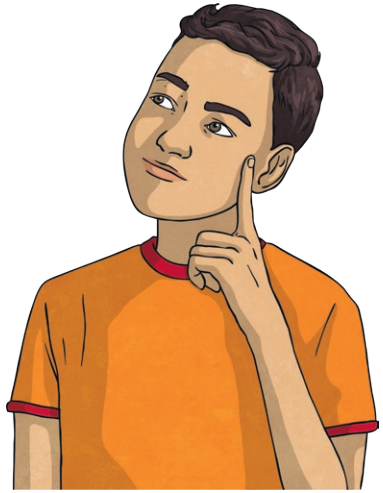
$$\frac{7}{12}, \quad \frac{8}{15}, \quad \frac{4}{9}$$

Explain how George might do this.

Try to find several ways to compare the fractions.

7. Pavel has to compare these two fractions:

$$\frac{9}{4} \quad \text{and} \quad \frac{16}{7}$$



Explain how Pavel might do this.

Try to find several ways to compare the fractions.

8. Nikita has to compare these two fractions:

$$\frac{18}{5} \text{ and } \frac{11}{3}$$

Explain how Nikita might do this.

Try to find several ways to compare the fractions.

9. George has three fractions.

$$\frac{25}{12}, \frac{45}{21}, \frac{32}{17}$$

Which could be the odd one out?

10. Nikita has three fractions.

$$\frac{32}{7}, \frac{44}{8}, \frac{63}{10}$$

Which could be the odd one out?

Year 6: Order and Compare Fractions **Answers**

1. Pavel has to compare these two fractions:

$$\frac{2}{5} \text{ and } \frac{4}{9}$$

- Convert to fractions with the same denominator. The lowest common multiple is 45 so $\frac{2}{5} = \frac{18}{45}$, $\frac{4}{9} = \frac{20}{45}$, which means that $\frac{2}{5} < \frac{4}{9}$
- Convert bopth fractions to decimals: $\frac{2}{5} = 0.4$, $\frac{4}{9} = 0.444$, so $\frac{2}{5} < \frac{4}{9}$.
- $\frac{2}{5} = \frac{4}{10}$, and $\frac{4}{9} > \frac{4}{10}$, so $\frac{4}{9} > \frac{2}{5}$.

2. Nikita has to compare these two fractions:

$$\frac{9}{13} \text{ and } \frac{22}{30}$$

- Convert to fractions with the same denominator. The lowest common multiple is 390, so $\frac{9}{13} = \frac{270}{390}$, $\frac{22}{30} = \frac{286}{390}$, which means that $\frac{9}{13} < \frac{22}{30}$
- Begin to convert to decimals using formal division method, working to each decimal place in turn: $\frac{9}{13} = 0.69$, $\frac{22}{30} = 0.73$, so $\frac{9}{13} < \frac{22}{30}$.

3. George has to compare these two fractions:

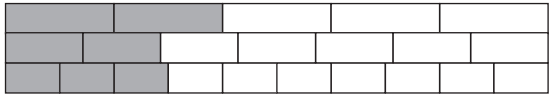
$$\frac{8}{15} \text{ and } \frac{11}{23}$$

- $\frac{8}{15}$ is greater than half, $\frac{11}{23}$ is less than half, so $\frac{8}{15} > \frac{11}{23}$
- Convert to fractions with the same denominator (345). $\frac{8}{15} = \frac{184}{345}$, $\frac{11}{23} = \frac{165}{345}$, so $\frac{8}{15} > \frac{11}{23}$
- 3. Begin to convert to decimals using formal division method, working to each decimal place in turn: $\frac{8}{15} = 0.53$, $\frac{11}{23} = 0.48$, so $\frac{8}{15} > \frac{11}{23}$.

4. Pavel has to order these fractions from smallest to largest:

$$\frac{2}{5}, \frac{2}{7}, \frac{3}{10}$$

- Convert to a common denominator (70): $\frac{27}{70}$, $\frac{20}{70}$, $\frac{21}{70}$, so $\frac{2}{7}$, $\frac{3}{10}$, $\frac{2}{5}$.
- Convert to decimals: 0.4 ($\frac{2}{5}$), 0.28 ($\frac{2}{7}$), 0.3 ($\frac{3}{10}$), so $\frac{1}{4}$, $\frac{2}{7}$, $\frac{3}{10}$, $\frac{2}{5}$.
- Draw bars:



5. Nikita has to order these fractions from smallest to largest:

$$\frac{5}{6}, \frac{3}{4}, \frac{2}{3}, \frac{7}{9}$$

- Convert to a common denominator (36): $\frac{30}{36}$, $\frac{27}{36}$, $\frac{24}{36}$, $\frac{28}{36}$, so $\frac{2}{3}$, $\frac{3}{4}$, $\frac{7}{9}$, $\frac{5}{6}$.
- Convert to decimals: 0.83 ($\frac{5}{6}$), 0.75 ($\frac{3}{4}$), 0.66 ($\frac{2}{3}$), 0.77 ($\frac{7}{9}$), so $\frac{2}{3}$, $\frac{3}{4}$, $\frac{7}{9}$, $\frac{5}{6}$.
- Draw bars:

Year 6: Order and Compare Fractions **Answers**

6. George has to order these fractions from smallest to largest:

$$\frac{7}{12},\ \frac{8}{15},\ \frac{4}{9}$$

- Convert to a common denominator (180): $\frac{105}{180}$, $\frac{96}{180}$, $\frac{80}{180}$, so $\frac{4}{9}$, $\frac{8}{15}$, $\frac{7}{12}$.
- Convert to equivalents with even denominators: $\frac{7}{12}$, $\frac{16}{30}$, $\frac{8}{14}$. Each of these are $\frac{1}{2} + \frac{1}{12}$, $\frac{1}{2} + \frac{1}{30}$, $\frac{1}{2} + \frac{1}{14}$, so using knowledge of ordering unit fractions $\frac{8}{15}$, $\frac{4}{7}$, $\frac{7}{12}$. (This method can be used as each fraction is just above $\frac{1}{2}$.)

7. Pavel has to compare these two fractions:

$$\frac{9}{4} \text{ and } \frac{16}{7}$$

- Convert to fractions with the same denominator (28). $\frac{9}{4} = \frac{63}{28}$, $\frac{16}{7} = \frac{64}{28}$, so $\frac{9}{4} < \frac{16}{7}$.
- Convert to mixed fractions: $\frac{9}{4} = 2\frac{1}{4}$, $\frac{16}{7} = 2\frac{2}{7}$, as $\frac{1}{4} = \frac{2}{8}$ and $\frac{2}{8} < \frac{2}{7}$, $2\frac{1}{4} < 2\frac{2}{7}$.

8. Nikita has to compare these two fractions:

$$\frac{18}{5} \text{ and } \frac{11}{3}$$

- Convert to fractions with the same denominator (15). $\frac{18}{5} = \frac{54}{15}$, $\frac{11}{3} = \frac{55}{15}$, so $\frac{18}{5} < \frac{11}{3}$.
- Convert to mixed fractions, then decimals: $\frac{18}{5} = 3\frac{3}{5} = 3.6$, $\frac{11}{3} = 3\frac{2}{3} = 3.66$, so $\frac{18}{5} < \frac{11}{3}$.

9. George has three fractions.

$$\frac{25}{12},\ \frac{45}{21},\ \frac{32}{17}$$

Which could be the odd one out?

- $\frac{32}{17} < 2$, whereas $\frac{25}{12} > 2$ and $\frac{45}{21} > 2$.
- Other answers possible.

10. Nikita has three fractions.

$$\frac{32}{7},\ \frac{44}{8},\ \frac{63}{10}$$

Which could be the odd one out?

- $\frac{44}{8} = 5\frac{1}{2}$, so it is the only fraction that is a whole number and a half.
- Other answers possible.