

Reasoning and Problem Solving

Step 5: Compare and Order Fractions Less than 1

National Curriculum Objectives:

Mathematics Year 5: (5F3) [Compare and order fractions whose denominators are all multiples of the same number](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Explain whether a statement is correct when comparing two fractions less than 1 with common numerators. Draw a diagram to check.

Expected Explain whether a statement is correct when comparing two fractions less than 1 with common numerators or numerators that are multiples of the same number. Draw a diagram to check.

Greater Depth Explain whether a statement is correct when comparing two fractions less than 1 with numerators that are multiples of the same number. Draw a diagram to check.

Questions 2, 5 and 8 (Problem Solving)

Developing Use digit cards to complete a comparison statement comparing fractions less than 1 where the missing denominators are the same, double or half of the starting fractions.

Expected Use digit cards to complete a comparison statement comparing fractions less than 1 where the missing denominators are multiples of the same number.

Greater Depth Use digit cards to complete a comparison statement comparing fractions less than 1 where the missing denominators have common factors or multiples.

Questions 3, 6 and 9 (Reasoning)

Developing Find the mistake when ordering fractions less than 1 where denominators are double or half of the starting fraction.

Expected Find the mistake when ordering fractions less than 1 where denominators are multiples of the same number.

Greater Depth Find the mistake when ordering fractions less than 1 where denominators have a common factor.

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Compare and Order Fractions Less than 1

1a. Wynter is comparing the fractions $\frac{4}{10}$ and $\frac{4}{7}$.

I know that tenths are bigger than sevenths, so $\frac{4}{10}$ is bigger than $\frac{4}{7}$.



Is she correct? Show how she could use a diagram to check her answer.



R

Compare and Order Fractions Less than 1

1b. Xin is comparing the fractions $\frac{3}{8}$ and $\frac{3}{5}$.

I know that eighths are bigger than fifths, so $\frac{3}{5}$ is bigger than $\frac{3}{8}$.



Is he correct? Show how he could use a diagram to check his answer.



R

2a. Use two number cards to complete the equation.

$$\frac{1}{6} < \frac{\boxed{}}{\boxed{}} < \frac{3}{6}$$



Find two possibilities.



PS

2b. Use two number cards to complete the equation.

$$\frac{4}{9} > \frac{\boxed{}}{\boxed{}} > \frac{2}{9}$$



Find two possibilities.



PS

3a. Kyle has put these fractions in ascending order.

$$\frac{7}{8}, \frac{5}{8}, \frac{7}{16}, \frac{1}{16}$$

Explain his mistake.

Rewrite the fractions in the correct order with the same denominators.



R

3b. Holly has put these fractions in ascending order.

$$\frac{1}{5}, \frac{3}{10}, \frac{4}{5}, \frac{7}{10}$$

Explain her mistake.

Rewrite the fractions in the correct order with the same denominators.



R

Compare and Order Fractions Less than 1

4a. Luna is comparing the fractions $\frac{2}{9}$ and $\frac{2}{3}$.

I know that $\frac{2}{9}$ is larger than $\frac{2}{3}$ because a ninth is three times bigger than a third.



Is she correct? Show how she could use a diagram to check her answer.



R

Compare and Order Fractions Less than 1

4b. Yussuf is comparing the fractions $\frac{6}{7}$ and $\frac{3}{4}$.

I know that $\frac{3}{4}$ equals $\frac{6}{8}$. $\frac{6}{7}$ is larger than $\frac{6}{8}$ because sevenths have bigger pieces than eighths.



Is he correct? Show how he could use a diagram to check his answer.



R

5a. Use two number cards to complete the equation.

$$\frac{3}{5} > \frac{\boxed{}}{\boxed{}} > \frac{2}{5}$$



Find two possibilities.



PS

5b. Use two number cards to complete the equation.

$$\frac{7}{11} < \frac{\boxed{}}{\boxed{}} < \frac{8}{11}$$



Find two possibilities.



PS

6a. Callum has put these fractions in ascending order.

$$\frac{1}{8}, \frac{3}{4}, \frac{7}{32}, \frac{11}{16}$$

Explain his mistake.

Rewrite the fractions in the correct order with the same denominators.



R

6b. Julia has put these fractions in descending order.

$$\frac{21}{24}, \frac{9}{12}, \frac{5}{6}, \frac{2}{3}$$

Explain her mistake.

Rewrite the fractions in the correct order with the same denominators.



R

Compare and Order Fractions Less than 1

Compare and Order Fractions Less than 1

7a. Fran is comparing the fractions $\frac{4}{9}$ and $\frac{12}{30}$.

I could make the numerators the same by dividing them by 3.



Is she correct? Show how she could use a diagram to check her answer.



R

7b. Mallory is comparing the fractions $\frac{7}{18}$ and $\frac{21}{32}$.

I could find a common factor of the denominators to help me compare the fractions.



Is he correct? Show how he could use a diagram to check his answer.



R

8a. Use two number cards to complete the equation.

$$\frac{24}{72} < \frac{\boxed{}}{\boxed{}} < \frac{60}{72}$$



Find two possibilities.



PS

8b. Use two number cards to complete the equation.

$$\frac{14}{32} > \frac{\boxed{}}{\boxed{}} > \frac{10}{32}$$



Find two possibilities.



PS

9a. Mo has put these fractions in ascending order.

$$\frac{16}{20} , \frac{21}{35} , \frac{18}{45} , \frac{12}{60}$$

Explain his mistake.

Rewrite the fractions in the correct order with the same denominators.



R

9b. Mildred has put these fractions in descending order.

$$\frac{20}{35} , \frac{12}{42} , \frac{10}{14} , \frac{9}{21}$$

Explain her mistake.

Rewrite the fractions in the correct order with the same denominators.



R

Reasoning and Problem Solving Compare and Order Fractions Less than 1

Developing

1a. Wynter is incorrect. Various answers, for example: She could use a bar model which shows that $\frac{4}{10} < \frac{4}{7}$.

2a. $\frac{2}{6}, \frac{5}{12}$ ($\frac{2}{5}$ is also a possibility but not expected at this stage).

3a. Kyle has put the fractions in descending order. The correct order is $\frac{1}{16}, \frac{7}{16}, \frac{10}{16}, \frac{14}{16}$.

Expected

4a. Luna is incorrect. Various answers, for example: She could use a bar model which shows that $\frac{2}{3} > \frac{2}{9}$ as each third is larger than each ninth.

5a. $\frac{8}{15}, \frac{5}{10}$

6a. Callum has ordered the fractions by the numerators before finding a common denominator. The correct order is $\frac{4}{32}, \frac{7}{32}, \frac{22}{32}, \frac{24}{32}$.

Greater Depth

7a. Fran is correct. Various answers, for example: She could use a division diagram which shows that $\frac{12}{30} = \frac{4}{10}$ and a bar model which shows $\frac{4}{9} > \frac{4}{10}$.

8a. $\frac{8}{12}, \frac{25}{36}, \frac{12}{18}$

9a. Mo has ordered the fractions by their denominators before he has found a common denominator. The correct order is $\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}$.

Reasoning and Problem Solving Compare and Order Fractions Less than 1

Developing

1b. Xin is incorrect. Various answers, for example: He could use a bar model which shows that $\frac{3}{5} > \frac{3}{8}$.

2b. $\frac{3}{9}, \frac{7}{18}$

3b. Holly has ordered the fractions by the numerators. The correct order is $\frac{2}{10}, \frac{3}{10}, \frac{7}{10}, \frac{8}{10}$.

Expected

4b. Yussuf is correct. Various answers, for example: He could use a bar model which shows that $\frac{6}{7} > \frac{6}{8}$ as each seventh is bigger than each eighth.

5b. $\frac{15}{22}, \frac{22}{33}$

6b. Julia has ordered the fractions by denominator before finding a common denominator. The correct order is $\frac{21}{24}, \frac{20}{24}, \frac{18}{24}, \frac{16}{24}$.

Greater Depth

7b. Mallory is incorrect. Various answers, for example: The only common factor of 18 and 32 is 2 and he can't divide the numerators by 2. Instead, he must make both numerators 21 by multiplying $\frac{7}{18}$ by 3. $\frac{21}{54} < \frac{21}{32}$

8b. $\frac{3}{8}, \frac{31}{96}, \frac{37}{96}$

9b. Mildred has ordered the fractions by the numerators before she has found a common denominator. The correct order is $\frac{5}{7}, \frac{4}{7}, \frac{3}{7}, \frac{2}{7}$.