

# Reasoning and Problem Solving

## Step 5: Compare and Order by Denominator

### National Curriculum Objectives:

Mathematics Year 6: (6F2) [Use common factors to simplify fractions; use common multiples to express fractions in the same denomination](#)

Mathematics Year 6: (6F3) [Compare and order fractions, including fractions > 1](#)

### Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** Find possible answers within parameters (where denominators are direct multiples of the same number).

**Expected** Find possible answers within parameters (where denominators are not always direct multiples of the same number).

**Greater Depth** Find possible answers within parameters (where denominators are not direct multiples of the same number).

Questions 2, 5 and 8 (Reasoning)

**Developing** Compare three fractions where denominators are direct multiples of the same number.

**Expected** Compare three fractions where denominators are not always direct multiples of the same number.

**Greater Depth** Compare three fractions where denominators are not direct multiples of the same number.

Questions 3, 6 and 9 (Reasoning)

**Developing** Solve a word problem by comparing three fractions where denominators are direct multiples of the same number.

**Expected** Solve a word problem by comparing three fractions where denominators are not always direct multiples of the same number.

**Greater Depth** Solve a word problem by comparing three fractions where denominators are not direct multiples of the same number.

More [Year 5 and Year 6 Fractions](#) resources.

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## Compare and Order by Denominator

1a. Cian is thinking of a fraction. He says,

It is greater than  $\frac{1}{2}$  but smaller than  $\frac{3}{4}$ . The denominator is 8.



Cian

Write down all possible fractions Cian could be thinking of.



6 PS

## Compare and Order by Denominator

1b. Jake is thinking of a fraction. He says,

It is greater than  $\frac{1}{4}$  but smaller than  $\frac{3}{4}$ . The denominator is an even number less than 8.



Jake

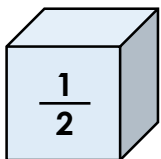
Write down all possible fractions Jake could be thinking of.



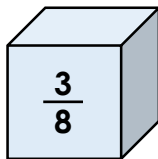
6 PS

2a. Ben is participating in a game show. He wants to choose the highest fraction of prize money to take home. The choices are:

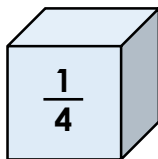
Box 1



Box 2



Box 3



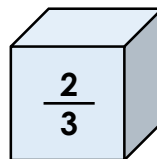
Which box should he choose? Explain how you know.



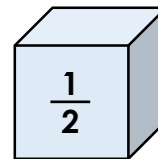
6 R

2b. Johnny is participating in a game show. He wants to choose the highest fraction of prize money to take home. The choices are:

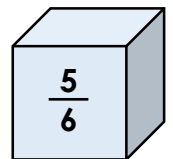
Box 1



Box 2



Box 3



Which box should he choose? Explain how you know.



6 R

3a. Hannah, Chuan and Alice are shopping for ribbon. They buy the following amounts:

Hannah buys  $\frac{8}{12}$  of a roll.

Chuan buys  $\frac{3}{6}$  of a roll.

Alice buys  $\frac{3}{4}$  of a roll.

Who bought the most ribbon? Convince me.



6 R

3b. Ben, Hannah and Gabriel are shopping for string. They buy the following amounts:

Ben buys  $\frac{2}{3}$  of a ball.

Hannah buys  $\frac{1}{6}$  of a ball.

Gabriel buys  $\frac{1}{2}$  of a ball.

Who bought the most string? Convince me.



6 R

## Compare and Order by Denominator

4a. Johnny is thinking of a fraction. He says,

It is greater than  $\frac{1}{3}$  but smaller than  $\frac{3}{4}$ . The denominator is an odd number between 3 and 7.



Johnny

Write down all possible fractions Johnny could be thinking of.



6 PS

## Compare and Order by Denominator

4b. Hannah is thinking of a fraction. She says,

It is greater than  $\frac{1}{2}$  but smaller than  $\frac{7}{10}$ . The denominator is an odd number less than 10.



Hannah

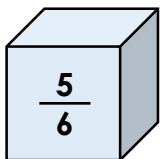
Write down all possible fractions Hannah could be thinking of.



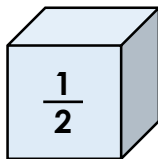
6 PS

5a. Cian is participating in a game show. He wants to choose the highest fraction of prize money to take home. The choices are:

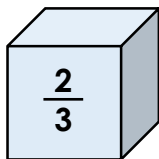
Box 1



Box 2



Box 3



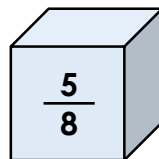
Which box should he choose? Explain how you know.



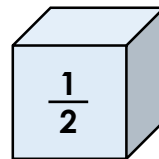
6 R

5b. Isabel is participating in a game show. He wants to choose the highest fraction of prize money to take home. The choices are:

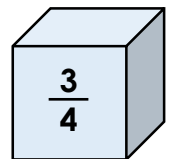
Box 1



Box 2



Box 3



Which box should he choose? Explain how you know.



6 R

6a. Isabel, Roy and Lucy are shopping for cotton. They buy the following amounts:

Isabel buys  $\frac{1}{2}$  of a spool.

Chuan buys  $\frac{3}{5}$  of a spool.

Lucy buys  $\frac{3}{4}$  of a spool.

Who bought the most cotton? Convince me.



6 R

6b. Alice, Uma and Cian are shopping for ribbon. They buy the following amounts:

Alice buys  $\frac{2}{3}$  of a roll.

Hannah buys  $\frac{10}{12}$  of a roll.

Cian buys  $\frac{1}{2}$  of a roll.

Who bought the most ribbon? Convince me.



6 R

## Compare and Order by Denominator

7a. Hafsa is thinking of a fraction. She says,

It is greater than  $\frac{3}{4}$  but smaller than  $\frac{9}{10}$ . The denominator is a number less than 10.



Hafsa

Write down all possible fractions Hafsa could be thinking of.



6 PS

## Compare and Order by Denominator

7b. Sinead is thinking of a fraction. She says,

It is greater than  $\frac{1}{2}$  but smaller than  $\frac{6}{7}$ . The denominator is an even number less than 8.



Sinead

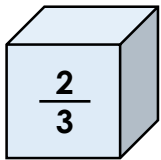
Write down all possible fractions Sinead could be thinking of.



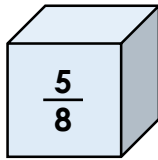
6 PS

8a. Alice is participating in a game show. She wants to choose the highest fraction of prize money to take home. The choices are:

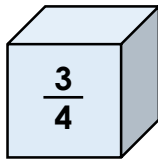
Box 1



Box 2



Box 3



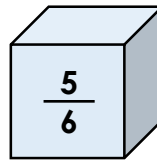
Which box should she choose? Explain how you know.



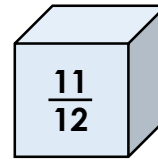
6 R

8b. Kelly is participating in a game show. She wants to choose the highest fraction of prize money to take home. The choices are:

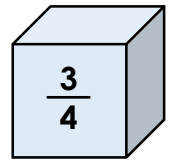
Box 1



Box 2



Box 3



Which box should she choose? Explain how you know.



6 R

9a. Josh, Jake and Alice are shopping for ribbon. They buy the following amounts:

Josh buys  $\frac{5}{9}$  of a roll.

Jake buys  $\frac{2}{3}$  of a roll.

Alice buys  $\frac{1}{6}$  of a roll.

Who bought the most ribbon? Convince me.



6 R

9b. Ben, Johnny and Hannah are shopping for string. They buy the following amounts:

Ben buys  $\frac{2}{3}$  of a ball.

Johnny buys  $\frac{7}{12}$  of a ball.

Hannah buys  $\frac{7}{8}$  of a ball.

Who bought the most string? Convince me.



6 R

## Reasoning and Problem Solving Compare and Order by Denominator

### Developing

1a.  $\frac{5}{8}$

2a. Box 1 because it contains the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 8.

3a. Alice bought the most ribbon as  $\frac{3}{4}$  is the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 8.

### Expected

4a.  $\frac{2}{5}$  or  $\frac{3}{5}$

5a. Box 1 because it contains the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 6.

6a. Lucy bought the most ribbon as  $\frac{3}{4}$  is the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 20.

### Greater Depth

7a.  $\frac{4}{5}$ ,  $\frac{5}{6}$ ,  $\frac{6}{7}$ ,  $\frac{7}{8}$  or  $\frac{8}{9}$

8a. Box 3 because it contains the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 24.

9a. Jake bought the most ribbon as  $\frac{2}{3}$  is the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 18.

## Reasoning and Problem Solving Compare and Order by Denominator

### Developing

1b.  $\frac{1}{2}$ ,  $\frac{2}{4}$ ,  $\frac{3}{6}$

2b. Box 3 because it contains the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 6.

3b. Ben bought the most ribbon as  $\frac{2}{3}$  is the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 6.

### Expected

4b.  $\frac{3}{5}$ ,  $\frac{4}{7}$  or  $\frac{7}{9}$

5b. Box 3 because it contains the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 8.

6b. Hannah bought the most ribbon as  $\frac{10}{12}$  is the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 12.

### Greater Depth

7b.  $\frac{3}{4}$  or  $\frac{5}{6}$

8b. Box 2 because it contains the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 12.

9b. Hannah bought the most ribbon as  $\frac{7}{8}$  is the largest fraction. This can be shown by finding the lowest common denominator of the three fractions: 24.