

Fractions: Starters

Contents

Questions and short answers

- ▶ Starter 1
- ▶ Starter 2
- ▶ Starter 3
- ▶ Starter 4
- ▶ Starter 5
- ▶ Starter 6
- ▶ Starter 7
- ▶ Starter 8
- ▶ Starter 9

Worked solutions

- ▶ Starter 1
- ▶ Starter 2
- ▶ Starter 3
- ▶ Starter 4
- ▶ Starter 5
- ▶ Starter 6
- ▶ Starter 7
- ▶ Starter 8
- ▶ Starter 9

Starter 1



A



B



C



D

Questions

1. Which shapes (A, B, C, D) are divided into equal parts?
2. In shape B, what fraction is shaded?
3. Draw a rectangle divided into 5 equal parts. Shade $\frac{3}{5}$.
4. Which is larger: $\frac{2}{5}$ or $\frac{3}{5}$?
5. Which is larger: $\frac{3}{5}$ or $\frac{3}{4}$?
6. Order the following fractions from smallest to largest:
 $\frac{1}{100}$, $\frac{100}{1}$, $\frac{1}{10}$, $\frac{10}{1}$, $\frac{1}{1}$

Starter 1



A



B



C



D



Q3: $\frac{3}{5}$

Questions

1. Which shapes (A, B, C, D) are divided into equal parts? **B and C**
2. In shape B, what fraction is shaded? $\frac{1}{4}$
3. Draw a rectangle divided into 5 equal parts. Shade $\frac{3}{5}$.
4. Which is larger: $\frac{2}{5}$ or $\frac{3}{5}$? $\frac{3}{5}$
5. Which is larger: $\frac{3}{5}$ or $\frac{3}{4}$? $\frac{3}{4}$
6. Order the following fractions from smallest to largest:

$$\frac{1}{100}, \frac{100}{1}, \frac{1}{10}, \frac{10}{1}, \frac{1}{1}$$
$$\frac{1}{100}, \frac{1}{10}, \frac{1}{1}, \frac{10}{1}, \frac{100}{1}$$

Worked Solution: Starter 1, Question 1

Question: Which shapes (A, B, C, D) are divided into equal parts?

Worked Solution: Equal parts must all be the same size. Shape B is a square divided into 4 equal smaller squares; shape C is a circle divided into 4 equal sectors. Shapes A and D have parts of different sizes.

Worked Solution: Starter 1, Question 1

Question: Which shapes (A, B, C, D) are divided into equal parts?

Worked Solution: Equal parts must all be the same size. Shape B is a square divided into 4 equal smaller squares; shape C is a circle divided into 4 equal sectors. Shapes A and D have parts of different sizes. **B and C are divided into equal parts.**

Worked Solution: Starter 1, Question 2

Question: In shape B, what fraction is shaded?

Worked Solution: Shape B has 4 equal parts, and 1 of those parts is shaded. Therefore the shaded fraction is shaded parts divided by total parts: $\frac{1}{4}$.

Worked Solution: Starter 1, Question 2

Question: In shape B, what fraction is shaded?

Worked Solution: Shape B has 4 equal parts, and 1 of those parts is shaded. Therefore the shaded fraction is shaded parts divided by total parts: $\frac{1}{4}$.

Worked Solution: Starter 1, Question 3

Question: Draw a rectangle divided into 5 equal parts. Shade $\frac{3}{5}$.

Worked Solution: Divide the rectangle into 5 equal vertical strips, then shade 3 of them.

Worked Solution: Starter 1, Question 3

Question: Draw a rectangle divided into 5 equal parts. Shade $\frac{3}{5}$.

Worked Solution: Divide the rectangle into 5 equal vertical strips, then shade 3 of them.



Three out of five equal parts are shaded: $\frac{3}{5}$.

Worked Solution: Starter 1, Question 4

Question: Which is larger: $\frac{2}{5}$ or $\frac{3}{5}$?

Worked Solution: The denominators are both 5, so compare the numerators. Since $3 > 2$,

Worked Solution: Starter 1, Question 4

Question: Which is larger: $\frac{2}{5}$ or $\frac{3}{5}$?

Worked Solution: The denominators are both 5, so compare the numerators. Since $3 > 2$, $\frac{3}{5}$ is larger.

Worked Solution: Starter 1, Question 5

Question: Which is larger: $\frac{3}{5}$ or $\frac{3}{4}$?

Worked Solution: The numerators are both 3. A smaller denominator means the equal parts are larger, so $\frac{3}{4}$ has larger parts than $\frac{3}{5}$.

Worked Solution: Starter 1, Question 5

Question: Which is larger: $\frac{3}{5}$ or $\frac{3}{4}$?

Worked Solution: The numerators are both 3. A smaller denominator means the equal parts are larger, so $\frac{3}{4}$ has larger parts than $\frac{3}{5}$. $\frac{3}{4}$ is larger.

Worked Solution: Starter 1, Question 6

Question: Order the following fractions from smallest to largest:

$$\frac{1}{100}, \frac{100}{1}, \frac{1}{10}, \frac{10}{1}, \frac{1}{1}.$$

Worked Solution: Convert to decimals: $\frac{1}{100} = 0.01$, $\frac{1}{10} = 0.1$,
 $\frac{1}{1} = 1$, $\frac{10}{1} = 10$, $\frac{100}{1} = 100$.

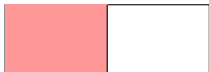
Worked Solution: Starter 1, Question 6

Question: Order the following fractions from smallest to largest:

$$\frac{1}{100}, \frac{100}{1}, \frac{1}{10}, \frac{10}{1}, \frac{1}{1}.$$

Worked Solution: Convert to decimals: $\frac{1}{100} = 0.01$, $\frac{1}{10} = 0.1$,
 $\frac{1}{1} = 1$, $\frac{10}{1} = 10$, $\frac{100}{1} = 100$. Smallest to largest: $\frac{1}{100}$, $\frac{1}{10}$, $\frac{1}{1}$, $\frac{10}{1}$, $\frac{100}{1}$.

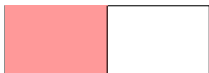
Starter 2



Questions

1. Write the fraction shaded for each bar.
2. Is the same proportion of each bar shaded?
3. Use the bars to fill in the blanks: $\frac{?}{2} = \frac{?}{4} = \frac{?}{6}$
4. Shade $\frac{2}{3}$ of a bar divided into 9 parts.
5. Find the missing numerator:
 $\frac{2}{3} = \frac{?}{9}$
6. Find the missing numerator:
 $\frac{1}{3} = \frac{?}{6}$.
7. Which two fractions are equivalent: $\frac{1}{2}, \frac{2}{5}, \frac{4}{8}, \frac{3}{6}$?

Starter 2



Q4: $\frac{6}{9} = \frac{2}{3}$

Questions

1. Write the fraction shaded for each bar. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$
2. Is the same proportion of each bar shaded? **Yes**
3. Use the bars to fill in the blanks: $\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$
4. Shade $\frac{2}{3}$ of a bar divided into 9 parts.
5. Find the missing numerator: $\frac{2}{3} = \frac{6}{9}$
6. Find the missing numerator: $\frac{1}{3} = \frac{2}{6}$.
7. Which two fractions are equivalent: $\frac{1}{2}$, $\frac{2}{5}$, $\frac{4}{8}$, $\frac{3}{6}$?
 $\frac{1}{2} = \frac{4}{8} = \frac{3}{6}$

Worked Solution: Starter 2, Question 1

Question: Write the fraction shaded for each bar.

Worked Solution: Count the shaded strips and the total number of equal strips in each bar. First bar: 1 shaded strip out of 2. Second bar: 2 shaded strips out of 4. Third bar: 3 shaded strips out of 6.

Worked Solution: Starter 2, Question 1

Question: Write the fraction shaded for each bar.

Worked Solution: Count the shaded strips and the total number of equal strips in each bar. First bar: 1 shaded strip out of 2. Second bar: 2 shaded strips out of 4. Third bar: 3 shaded strips out of 6. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$.

Worked Solution: Starter 2, Question 2

Question: Is the same proportion of each bar shaded?

Worked Solution: In each bar, the shaded part is exactly half of the whole bar, even though the bars are split into different numbers of parts.

Worked Solution: Starter 2, Question 2

Question: Is the same proportion of each bar shaded?

Worked Solution: In each bar, the shaded part is exactly half of the whole bar, even though the bars are split into different numbers of parts. Yes, each bar is $\frac{1}{2}$ shaded.

Worked Solution: Starter 2, Question 3

Question: Use the bars to fill in the blanks: $\frac{?}{2} = \frac{?}{4} = \frac{?}{6}$.

Worked Solution: Each bar is half shaded, so the missing numerators are the numbers that make each fraction equal to $\frac{1}{2}$.

Worked Solution: Starter 2, Question 3

Question: Use the bars to fill in the blanks: $\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$.

Worked Solution: Each bar is half shaded, so the missing numerators are the numbers that make each fraction equal to $\frac{1}{2}$.

Thus the completed equation is $\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$.

Worked Solution: Starter 2, Question 4

Question: Shade $\frac{2}{3}$ of a bar divided into 9 parts.

Worked Solution: A bar divided into 9 parts has 3 parts in each third, because $9 \div 3 = 3$. So $\frac{2}{3}$ means $2 \times 3 = 6$ parts.

Worked Solution: Starter 2, Question 4

Question: Shade $\frac{2}{3}$ of a bar divided into 9 parts.

Worked Solution: A bar divided into 9 parts has 3 parts in each third, because $9 \div 3 = 3$. So $\frac{2}{3}$ means $2 \times 3 = 6$ parts. Shade 6 of the 9 parts, i.e. $\frac{6}{9}$.

Worked Solution: Starter 2, Question 5

Question: Find the missing numerator: $\frac{2}{3} = \frac{?}{9}$.

Worked Solution: The denominator 3 is multiplied by 3 to get 9.
So the numerator is also multiplied by 3: $2 \times 3 =$.

Worked Solution: Starter 2, Question 5

Question: Find the missing numerator: $\frac{2}{3} = \frac{6}{9}$.

Worked Solution: The denominator 3 is multiplied by 3 to get 9. So the numerator is also multiplied by 3: $2 \times 3 = 6$. The missing numerator is 6.

Worked Solution: Starter 2, Question 6

Question: Find the missing numerator: $\frac{1}{3} = \frac{?}{6}$.

Worked Solution: The denominator 3 is multiplied by 2 to get 6.
So the numerator is also multiplied by 2: $1 \times 2 =$.

Worked Solution: Starter 2, Question 6

Question: Find the missing numerator: $\frac{1}{3} = \frac{2}{6}$.

Worked Solution: The denominator 3 is multiplied by 2 to get 6.
So the numerator is also multiplied by 2: $1 \times 2 = 2$. The missing numerator is 2.

Worked Solution: Starter 2, Question 7

Question: Which two fractions are equivalent: $\frac{1}{2}$, $\frac{2}{5}$, $\frac{4}{8}$, $\frac{3}{6}$?

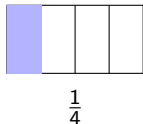
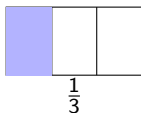
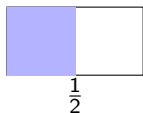
Worked Solution: Simplify $\frac{4}{8}$ by dividing top and bottom by 4, giving $\frac{1}{2}$. Simplify $\frac{3}{6}$ by dividing top and bottom by 3, giving $\frac{1}{2}$. The fraction $\frac{2}{5}$ does not simplify to $\frac{1}{2}$.

Worked Solution: Starter 2, Question 7

Question: Which two fractions are equivalent: $\frac{1}{2}$, $\frac{2}{5}$, $\frac{4}{8}$, $\frac{3}{6}$?

Worked Solution: Simplify $\frac{4}{8}$ by dividing top and bottom by 4, giving $\frac{1}{2}$. Simplify $\frac{3}{6}$ by dividing top and bottom by 3, giving $\frac{1}{2}$. The fraction $\frac{2}{5}$ does not simplify to $\frac{1}{2}$. $\frac{1}{2} = \frac{4}{8} = \frac{3}{6}$.

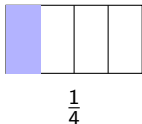
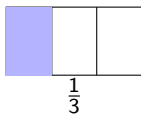
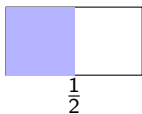
Starter 3: Comparing Fractions



Questions

1. Which is larger: $\frac{1}{2}$ or $\frac{1}{3}$?
2. Compare $\frac{2}{5}$ and $\frac{4}{5}$. Which is bigger?
3. Convert $\frac{3}{4}$ and $\frac{5}{8}$ to a common denominator. Which is larger?
4. Order from smallest to largest:
 $\frac{1}{3}, \frac{1}{6}, \frac{1}{2}$.
5. Sam ate $\frac{2}{3}$ of a pizza, Lee ate $\frac{5}{6}$ of the same pizza. Who ate more?
6. Compare $\frac{4}{6}$ and $\frac{2}{3}$.

Starter 3: Comparing Fractions



Questions

1. Which is larger: $\frac{1}{2}$ or $\frac{1}{3}$? $\frac{1}{2}$
2. Compare $\frac{2}{5}$ and $\frac{4}{5}$. Which is bigger? $\frac{4}{5}$
3. Convert $\frac{3}{4}$ and $\frac{5}{8}$ to a common denominator. Which is larger?
 $\frac{3}{4} = \frac{6}{8}$; larger: $\frac{3}{4}$
4. Order from smallest to largest:
 $\frac{1}{3}, \frac{1}{6}, \frac{1}{2}, \frac{1}{6}, \frac{1}{3}, \frac{1}{2}$
5. Sam ate $\frac{2}{3}$ of a pizza, Lee ate $\frac{5}{6}$ of the same pizza. Who ate more? Lee ate more.
6. Compare $\frac{4}{6}$ and $\frac{2}{3}$. Equal: $\frac{4}{6} = \frac{2}{3}$

Worked Solution: Starter 3, Question 1

Question: Which is larger: $\frac{1}{2}$ or $\frac{1}{3}$?

Worked Solution: The numerators are the same, so compare the denominators. Since $2 < 3$, halves are larger than thirds.

Worked Solution: Starter 3, Question 1

Question: Which is larger: $\frac{1}{2}$ or $\frac{1}{3}$?

Worked Solution: The numerators are the same, so compare the denominators. Since $2 < 3$, halves are larger than thirds. $\frac{1}{2}$ is larger.

Worked Solution: Starter 3, Question 2

Question: Compare $\frac{2}{5}$ and $\frac{4}{5}$. Which is bigger?

Worked Solution: Both fractions have denominator 5, so compare numerators: $4 > 2$.

Worked Solution: Starter 3, Question 2

Question: Compare $\frac{2}{5}$ and $\frac{4}{5}$. Which is bigger?

Worked Solution: Both fractions have denominator 5, so compare numerators: $4 > 2$. $\frac{4}{5}$ is bigger.

Worked Solution: Starter 3, Question 3

Question: Convert $\frac{3}{4}$ and $\frac{5}{8}$ to a common denominator. Which is larger?

Worked Solution: The denominator 8 is a multiple of 4. So $\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$. Now compare $\frac{6}{8}$ and $\frac{5}{8}$.

Worked Solution: Starter 3, Question 3

Question: Convert $\frac{3}{4}$ and $\frac{5}{8}$ to a common denominator. Which is larger?

Worked Solution: The denominator 8 is a multiple of 4. So

$\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$. Now compare $\frac{6}{8}$ and $\frac{5}{8}$. $\frac{3}{4} = \frac{6}{8}$ is larger.

Worked Solution: Starter 3, Question 4

Question: Order from smallest to largest: $\frac{1}{3}, \frac{1}{6}, \frac{1}{2}$.

Worked Solution: Use denominator 6: $\frac{1}{3} = \frac{2}{6}$, $\frac{1}{6}$ stays as $\frac{1}{6}$, and $\frac{1}{2} = \frac{3}{6}$. Since $1 < 2 < 3$, order by the numerators.

Worked Solution: Starter 3, Question 4

Question: Order from smallest to largest: $\frac{1}{3}$, $\frac{1}{6}$, $\frac{1}{2}$.

Worked Solution: Use denominator 6: $\frac{1}{3} = \frac{2}{6}$, $\frac{1}{6}$ stays as $\frac{1}{6}$, and $\frac{1}{2} = \frac{3}{6}$. Since $1 < 2 < 3$, order by the numerators. $\frac{1}{6}$, $\frac{2}{6}$, $\frac{3}{6}$.

Worked Solution: Starter 3, Question 5

Question: Sam ate $\frac{2}{3}$ of a pizza, Lee ate $\frac{5}{6}$ of the same pizza.
Who ate more?

Worked Solution: Use denominator 6: $\frac{2}{3} = \frac{4}{6}$. Since $\frac{5}{6} > \frac{4}{6}$, Lee ate more.

Worked Solution: Starter 3, Question 5

Question: Sam ate $\frac{2}{3}$ of a pizza, Lee ate $\frac{5}{6}$ of the same pizza.
Who ate more?

Worked Solution: Use denominator 6: $\frac{2}{3} = \frac{4}{6}$. Since $\frac{5}{6} > \frac{4}{6}$, Lee ate more. **Lee ate more.**

Worked Solution: Starter 3, Question 6

Question: Compare $\frac{4}{6}$ and $\frac{2}{3}$.

Worked Solution: Simplify $\frac{4}{6}$ by dividing numerator and denominator by 2: $\frac{4 \div 2}{6 \div 2} = \frac{2}{3}$.

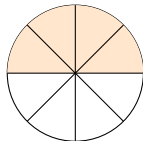
Worked Solution: Starter 3, Question 6

Question: Compare $\frac{4}{6}$ and $\frac{2}{3}$.

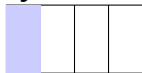
Worked Solution: Simplify $\frac{4}{6}$ by dividing numerator and denominator by 2: $\frac{4 \div 2}{6 \div 2} = \frac{2}{3}$. **Equal:** $\frac{4}{6} = \frac{2}{3}$.

Starter 4

Fractions everywhere



Pizza



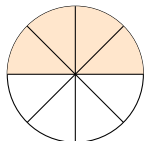
Chocolate

Questions

1. A cake is cut into 10 equal slices. If 3 are eaten, what fraction remains? ____.
2. There are 30 students. $\frac{2}{5}$ walk to school. How many walk?
3. A ruler is 24 cm long. Mark $\frac{1}{2}$ and $\frac{1}{3}$ on it. How many cm is each?
4. Which is longer: $\frac{3}{4}$ of an hour or $\frac{2}{3}$ of an hour? (1 hour = 60 mins)
5. You have \$30. You spend $\frac{2}{5}$ on a book. How much do you spend? How much left?

Starter 4

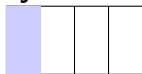
Fractions everywhere



Pizza

$$\frac{1}{3} = 8 \text{ cm}$$

$$\frac{1}{2} = 12 \text{ cm}$$



Chocolate

Questions

1. A cake is cut into 10 equal slices. If 3 are eaten, what fraction remains? $\frac{7}{10}$.
2. There are 30 students. $\frac{2}{5}$ walk to school. How many walk? **12 students walk**
3. A ruler is 24 cm long. Mark $\frac{1}{2}$ and $\frac{1}{3}$ on it. How many cm is each?
4. Which is longer: $\frac{3}{4}$ of an hour or $\frac{2}{3}$ of an hour? (1 hour = 60 mins) **$\frac{3}{4}$ hour (45 mins) is longer**
5. You have \$30. You spend $\frac{2}{5}$ on a book. How much do you spend? How much left? **Spend \$12, left \$18**

Worked Solution: Starter 4, Question 1

Question: A cake is cut into 10 equal slices. If 3 are eaten, what fraction remains?

Worked Solution: The whole cake has 10 slices. If 3 are eaten, the number remaining is $10 - 3 = 7$. So the fraction remaining is $\frac{7}{10}$.

Worked Solution: Starter 4, Question 1

Question: A cake is cut into 10 equal slices. If 3 are eaten, what fraction remains?

Worked Solution: The whole cake has 10 slices. If 3 are eaten, the number remaining is $10 - 3 = 7$. So the fraction remaining is $\frac{7}{10}$.

Worked Solution: Starter 4, Question 2

Question: There are 30 students. $\frac{2}{5}$ walk to school. How many walk?

Worked Solution: First find one fifth: $30 \div 5 = 6$. Two fifths is two of these parts: $2 \times 6 = 12$.

Worked Solution: Starter 4, Question 2

Question: There are 30 students. $\frac{2}{5}$ walk to school. How many walk?

Worked Solution: First find one fifth: $30 \div 5 = 6$. Two fifths is two of these parts: $2 \times 6 = 12$. **12 students walk.**

Worked Solution: Starter 4, Question 3

Question: A ruler is 24 cm long. Mark $\frac{1}{2}$ and $\frac{1}{3}$ on it. How many cm is each?

Worked Solution: $\frac{1}{3}$ of 24 cm means $24 \div 3 = 8$ cm. $\frac{1}{2}$ of 24 cm means $24 \div 2 = 12$ cm.

Worked Solution: Starter 4, Question 3

Question: A ruler is 24 cm long. Mark $\frac{1}{2}$ and $\frac{1}{3}$ on it. How many cm is each?

Worked Solution: $\frac{1}{3}$ of 24 cm means $24 \div 3 = 8$ cm. $\frac{1}{2}$ of 24 cm means $24 \div 2 = 12$ cm. $\frac{1}{3} = 8$ cm and $\frac{1}{2} = 12$ cm.

Worked Solution: Starter 4, Question 4

Question: Which is longer: $\frac{3}{4}$ of an hour or $\frac{2}{3}$ of an hour? (1 hour = 60 mins)

Worked Solution: $\frac{3}{4}$ of 60 mins: $60 \div 4 \times 3 = 45$ mins. $\frac{2}{3}$ of 60 mins: $60 \div 3 \times 2 = 40$ mins. Since $45 > 40$,

Worked Solution: Starter 4, Question 4

Question: Which is longer: $\frac{3}{4}$ of an hour or $\frac{2}{3}$ of an hour? (1 hour = 60 mins)

Worked Solution: $\frac{3}{4}$ of 60 mins: $60 \div 4 \times 3 = 45$ mins. $\frac{2}{3}$ of 60 mins: $60 \div 3 \times 2 = 40$ mins. Since $45 > 40$, $\frac{3}{4}$ hour is longer.

Worked Solution: Starter 4, Question 5

Question: You have \$30. You spend $\frac{2}{5}$ on a book. How much do you spend? How much left?

Worked Solution: One fifth of \$30 is $30 \div 5 = \$6$. Two fifths is $2 \times \$6 = \12 . The amount left is $30 - 12 = \$18$.

Worked Solution: Starter 4, Question 5

Question: You have \$30. You spend $\frac{2}{5}$ on a book. How much do you spend? How much left?

Worked Solution: One fifth of \$30 is $30 \div 5 = \$6$. Two fifths is $2 \times \$6 = \12 . The amount left is $30 - 12 = \$18$. Spend \$12, left \$18.

Worked Solution: Starter 4, Question 6

Question: A recipe needs $\frac{3}{4}$ cup of milk. You only have a $\frac{1}{4}$ cup measure. How many times must you fill it?

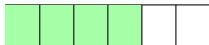
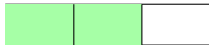
Worked Solution: Count quarter-cups: $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$.

Worked Solution: Starter 4, Question 6

Question: A recipe needs $\frac{3}{4}$ cup of milk. You only have a $\frac{1}{4}$ cup measure. How many times must you fill it?

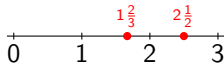
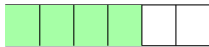
Worked Solution: Count quarter-cups: $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$. You must fill the $\frac{1}{4}$ cup 3 times.

Starter 5



1. $\frac{1}{2} = \frac{?}{6}$
2. Write the fraction represented by each bar. (Extension) show that they are equivalent
3. $\frac{5}{6} = \frac{10}{?}$
4. Mark $1\frac{2}{3}$ and $2\frac{1}{2}$ on the number line. Convert each to an improper fraction.
5. $\frac{2}{3} = \frac{?}{12}$
6. Which are equivalent to $\frac{3}{7}$:
 $\frac{9}{21}, \frac{6}{14}, \frac{12}{28}, \frac{8}{21}$?
7. Write 3 fractions equivalent to $\frac{4}{9}$
8. Compare ($< > =$) these fractions:
 $\frac{2}{5} \square \frac{6}{15}$
9. Fully simplify $\frac{48}{18}$

Starter 5



- $\frac{1}{2} = \frac{3}{6}$
- Write the fraction represented by each bar. (Extension) show that they are equivalent $\frac{2}{3}, \frac{4}{6}, \frac{6}{9}$
- $\frac{5}{6} = \frac{10}{12}$
- Mark $1\frac{2}{3}$ and $2\frac{1}{2}$ on the number line. Convert each to an improper fraction.
 $1\frac{2}{3} = \frac{5}{3}; 2\frac{1}{2} = \frac{5}{2}$
- $\frac{2}{3} = \frac{8}{12}$

- Which are equivalent to $\frac{3}{7}$:
 $\frac{9}{21}, \frac{6}{14}, \frac{12}{28}, \frac{8}{21}$?
 $\frac{9}{21}, \frac{6}{14}, \frac{12}{28}$
- Write 3 fractions equivalent to $\frac{4}{9}$
 $\frac{8}{18}, \frac{12}{27}, \frac{16}{36}$
- Compare ($< > =$) these fractions:
 $\frac{2}{5} \square \frac{6}{15} =$
- Fully simplify $\frac{48}{18}$ $\frac{8}{3}$
(or $2\frac{2}{3}$)

Worked Solution: Starter 5, Question 1

Question: $\frac{1}{2} = \frac{?}{6}$

Worked Solution: The denominator is multiplied by 3: $2 \times 3 = 6$.
So multiply the numerator by 3: $1 \times 3 = 3$.

Worked Solution: Starter 5, Question 1

Question: $\frac{1}{2} = \frac{3}{6}$

Worked Solution: The denominator is multiplied by 3: $2 \times 3 = 6$.
So multiply the numerator by 3: $1 \times 3 = 3$. The missing numerator is 3.

Worked Solution: Starter 5, Question 2

Question: Write the fraction represented by each bar. (Extension)
Show that they are equivalent.

Worked Solution: Count shaded parts and total parts. The bars show $\frac{2}{3}$, $\frac{4}{6}$, and $\frac{6}{9}$. Simplifying: $\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}$, and $\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$.

Worked Solution: Starter 5, Question 2

Question: Write the fraction represented by each bar. (Extension)
Show that they are equivalent.

Worked Solution: Count shaded parts and total parts. The bars show $\frac{2}{3}$, $\frac{4}{6}$, and $\frac{6}{9}$. Simplifying: $\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}$, and $\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$.
 $\frac{2}{3} = \frac{4}{6} = \frac{6}{9}$.

Worked Solution: Starter 5, Question 3

Question: $\frac{5}{6} = \frac{10}{?}$

Worked Solution: The numerator is multiplied by 2: $5 \times 2 = 10$.
So multiply the denominator by 2: $6 \times 2 = 12$.

Worked Solution: Starter 5, Question 3

Question: $\frac{5}{6} = \frac{10}{12}$

Worked Solution: The numerator is multiplied by 2: $5 \times 2 = 10$.
So multiply the denominator by 2: $6 \times 2 = 12$. The missing denominator is 12.

Worked Solution: Starter 5, Question 4

Question: Mark $1\frac{2}{3}$ and $2\frac{1}{2}$ on the number line. Convert each to an improper fraction.

Worked Solution: On the number line, $1\frac{2}{3}$ is between 1 and 2, and $2\frac{1}{2}$ is halfway between 2 and 3. For the improper fractions:
 $1\frac{2}{3} = \frac{3+2}{3} = \frac{5}{3}$ and $2\frac{1}{2} = \frac{4+1}{2} = \frac{5}{2}$.

Worked Solution: Starter 5, Question 4

Question: Mark $1\frac{2}{3}$ and $2\frac{1}{2}$ on the number line. Convert each to an improper fraction.

Worked Solution: On the number line, $1\frac{2}{3}$ is between 1 and 2, and $2\frac{1}{2}$ is halfway between 2 and 3. For the improper fractions: $1\frac{2}{3} = \frac{3+2}{3} = \frac{5}{3}$ and $2\frac{1}{2} = \frac{4+1}{2} = \frac{5}{2}$. $1\frac{2}{3} = \frac{5}{3}$, and $2\frac{1}{2} = \frac{5}{2}$.

Worked Solution: Starter 5, Question 5

Question: $\frac{2}{3} = \frac{?}{12}$

Worked Solution: The denominator is multiplied by 4:
 $3 \times 4 = 12$. So multiply the numerator by 4: $2 \times 4 = 8$.

Worked Solution: Starter 5, Question 5

Question: $\frac{2}{3} = \frac{8}{12}$

Worked Solution: The denominator is multiplied by 4:
 $3 \times 4 = 12$. So multiply the numerator by 4: $2 \times 4 = 8$. The missing numerator is 8.

Worked Solution: Starter 5, Question 6

Question: Which are equivalent to $\frac{3}{7}$: $\frac{9}{21}$, $\frac{6}{14}$, $\frac{12}{28}$, $\frac{8}{21}$?

Worked Solution: Multiply $\frac{3}{7}$ by 3 to get $\frac{9}{21}$, by 2 to get $\frac{6}{14}$, and by 4 to get $\frac{12}{28}$. The fraction $\frac{8}{21}$ is not equivalent because 8 is not a multiple of 3.

Worked Solution: Starter 5, Question 6

Question: Which are equivalent to $\frac{3}{7}$: $\frac{9}{21}$, $\frac{6}{14}$, $\frac{12}{28}$, $\frac{8}{21}$?

Worked Solution: Multiply $\frac{3}{7}$ by 3 to get $\frac{9}{21}$, by 2 to get $\frac{6}{14}$, and by 4 to get $\frac{12}{28}$. The fraction $\frac{8}{21}$ is not equivalent because 8 is not a multiple of 3. $\frac{9}{21}$, $\frac{6}{14}$, $\frac{12}{28}$.

Worked Solution: Starter 5, Question 7

Question: Write 3 fractions equivalent to $\frac{4}{9}$.

Worked Solution: Multiply the numerator and denominator by the same number. For example, by 2, 3, and 4: $\frac{8}{18}$, $\frac{12}{27}$, $\frac{16}{36}$.

Worked Solution: Starter 5, Question 7

Question: Write 3 fractions equivalent to $\frac{4}{9}$.

Worked Solution: Multiply the numerator and denominator by the same number. For example, by 2, 3, and 4: $\frac{8}{18}$, $\frac{12}{27}$, $\frac{16}{36}$. $\frac{8}{18}$, $\frac{12}{27}$, $\frac{16}{36}$.

Worked Solution: Starter 5, Question 8

Question: Compare ($<$, $>$, $=$) these fractions: $\frac{2}{5} \square \frac{6}{15}$.

Worked Solution: Simplify $\frac{6}{15}$ by dividing top and bottom by 3:
 $\frac{6 \div 3}{15 \div 3} = \frac{2}{5}$. Therefore the two fractions are equal.

Worked Solution: Starter 5, Question 8

Question: Compare ($<$, $>$, $=$) these fractions: $\frac{2}{5} \square \frac{6}{15}$.

Worked Solution: Simplify $\frac{6}{15}$ by dividing top and bottom by 3:
 $\frac{6 \div 3}{15 \div 3} = \frac{2}{5}$. Therefore the two fractions are equal. $=$

Worked Solution: Starter 5, Question 9

Question: Fully simplify $\frac{48}{18}$.

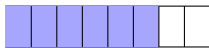
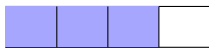
Worked Solution: Divide numerator and denominator by their common factor 6: $48 \div 6 = 8$ and $18 \div 6 = 3$. So $\frac{48}{18} = \frac{8}{3}$. This can also be written as the mixed number $2\frac{2}{3}$.

Worked Solution: Starter 5, Question 9

Question: Fully simplify $\frac{48}{18}$.

Worked Solution: Divide numerator and denominator by their common factor 6: $48 \div 6 = 8$ and $18 \div 6 = 3$. So $\frac{48}{18} = \frac{8}{3}$. This can also be written as the mixed number $2\frac{2}{3}$. $\frac{8}{3}$ or $2\frac{2}{3}$.

Starter 6



1. $\frac{3}{5} = \frac{?}{20}$

2. Write the fraction shown by each bar. (Extension) Explain why they represent the same amount.

3. $\frac{4}{7} = \frac{?}{21}$

4. Mark $1\frac{3}{4}$ and $2\frac{2}{3}$ on the number line. Convert both to improper fractions.

6. Which are equivalent to $\frac{5}{9}$:

$\frac{10}{18}, \frac{15}{27}, \frac{12}{20}, \frac{25}{45}$?

7. Write 3 fractions equivalent to $\frac{7}{12}$.

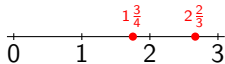
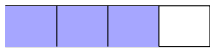
8. Order these fractions in ascending order:

$\frac{2}{8}, \frac{4}{6}, \frac{5}{12}$

9. Compare using $<$, $>$, or $=$:

$\frac{9}{14} \square \frac{19}{28}$

Starter 6



1. $\frac{3}{5} = \frac{12}{20}$

2. Write the fraction shown by each bar.
(Extension) Explain why they represent the same amount.

$\frac{3}{4}, \frac{6}{8}, \frac{9}{12}$

3. $\frac{4}{7} = \frac{12}{21}$

4. Mark $1\frac{3}{4}$ and $2\frac{2}{3}$ on the number line.

Convert both to improper fractions.

$1\frac{3}{4} = \frac{7}{4}, 2\frac{2}{3} = \frac{8}{3}$

6. Which are equivalent to $\frac{5}{9}$:

$\frac{10}{18}, \frac{15}{27}, \frac{12}{20}, \frac{25}{45}$
 $\frac{10}{18}, \frac{15}{27}, \frac{25}{45}$

7. Write 3 fractions equivalent to $\frac{7}{12}$.

$\frac{14}{24}, \frac{21}{36}, \frac{28}{48}$

8. Order these fractions in ascending order:

$\frac{2}{8}, \frac{4}{6}, \frac{5}{12}$

$\frac{2}{8}, \frac{5}{12}, \frac{4}{6}$

9. Compare using $<$, $>$, or $=$:

$\frac{9}{14} \square \frac{19}{28}$

Worked Solution: Starter 6, Question 1

Question: $\frac{3}{5} = \frac{?}{20}$

Worked Solution: The denominator is multiplied by 4:
 $5 \times 4 = 20$. So multiply the numerator by 4: $3 \times 4 = 12$.

Worked Solution: Starter 6, Question 1

Question: $\frac{3}{5} = \frac{12}{20}$

Worked Solution: The denominator is multiplied by 4:
 $5 \times 4 = 20$. So multiply the numerator by 4: $3 \times 4 = 12$. The missing numerator is 12.

Worked Solution: Starter 6, Question 2

Question: Write the fraction shown by each bar. (Extension)
Explain why they represent the same amount.

Worked Solution: The bars show $\frac{3}{4}$, $\frac{6}{8}$, and $\frac{9}{12}$. Each fraction simplifies to $\frac{3}{4}$: $\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$ and $\frac{9}{12} = \frac{9 \div 3}{12 \div 3} = \frac{3}{4}$.

Worked Solution: Starter 6, Question 2

Question: Write the fraction shown by each bar. (Extension)
Explain why they represent the same amount.

Worked Solution: The bars show $\frac{3}{4}$, $\frac{6}{8}$, and $\frac{9}{12}$. Each fraction simplifies to $\frac{3}{4}$: $\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$ and $\frac{9}{12} = \frac{9 \div 3}{12 \div 3} = \frac{3}{4}$. $\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$.

Worked Solution: Starter 6, Question 3

Question: $\frac{4}{7} = \frac{?}{21}$

Worked Solution: The denominator is multiplied by 3:
 $7 \times 3 = 21$. So multiply the numerator by 3: $4 \times 3 = 12$.

Worked Solution: Starter 6, Question 3

Question: $\frac{4}{7} = \frac{12}{21}$

Worked Solution: The denominator is multiplied by 3:

$7 \times 3 = 21$. So multiply the numerator by 3: $4 \times 3 = 12$. The missing numerator is 12.

Worked Solution: Starter 6, Question 4

Question: Mark $1\frac{3}{4}$ and $2\frac{2}{3}$ on the number line. Convert both to improper fractions.

Worked Solution: On the number line, $1\frac{3}{4}$ is three quarters past 1, and $2\frac{2}{3}$ is two thirds past 2. Converting: $1\frac{3}{4} = \frac{4+3}{4} = \frac{7}{4}$, and $2\frac{2}{3} = \frac{6+2}{3} = \frac{8}{3}$.

Worked Solution: Starter 6, Question 4

Question: Mark $1\frac{3}{4}$ and $2\frac{2}{3}$ on the number line. Convert both to improper fractions.

Worked Solution: On the number line, $1\frac{3}{4}$ is three quarters past 1, and $2\frac{2}{3}$ is two thirds past 2. Converting: $1\frac{3}{4} = \frac{4+3}{4} = \frac{7}{4}$, and $2\frac{2}{3} = \frac{6+2}{3} = \frac{8}{3}$. $1\frac{3}{4} = \frac{7}{4}$ and $2\frac{2}{3} = \frac{8}{3}$.

Worked Solution: Starter 6, Question 5

Question: Fully simplify: $\frac{42}{56}$.

Worked Solution: Divide the numerator and denominator by their common factor 14: $42 \div 14 = 3$ and $56 \div 14 = 4$.

Worked Solution: Starter 6, Question 5

Question: Fully simplify: $\frac{42}{56}$.

Worked Solution: Divide the numerator and denominator by their common factor 14: $42 \div 14 = 3$ and $56 \div 14 = 4$. $\frac{42}{56} = \frac{3}{4}$.

Worked Solution: Starter 6, Question 6

Question: Which are equivalent to $\frac{5}{9}$: $\frac{10}{18}$, $\frac{15}{27}$, $\frac{12}{20}$, $\frac{25}{45}$?

Worked Solution: Simplify each fraction: $\frac{10}{18} = \frac{5}{9}$, $\frac{15}{27} = \frac{5}{9}$,
 $\frac{12}{20} = \frac{3}{5}$, and $\frac{25}{45} = \frac{5}{9}$.

Worked Solution: Starter 6, Question 6

Question: Which are equivalent to $\frac{5}{9}$: $\frac{10}{18}$, $\frac{15}{27}$, $\frac{12}{20}$, $\frac{25}{45}$?

Worked Solution: Simplify each fraction: $\frac{10}{18} = \frac{5}{9}$, $\frac{15}{27} = \frac{5}{9}$,
 $\frac{12}{20} = \frac{3}{5}$, and $\frac{25}{45} = \frac{5}{9}$. $\frac{10}{18}$, $\frac{15}{27}$, $\frac{25}{45}$.

Worked Solution: Starter 6, Question 7

Question: Write 3 fractions equivalent to $\frac{7}{12}$.

Worked Solution: Multiply numerator and denominator by 2, 3, and 4: $\frac{14}{24}$, $\frac{21}{36}$, $\frac{28}{48}$.

Worked Solution: Starter 6, Question 7

Question: Write 3 fractions equivalent to $\frac{7}{12}$.

Worked Solution: Multiply numerator and denominator by 2, 3, and 4: $\frac{14}{24}$, $\frac{21}{36}$, $\frac{28}{48}$. $\frac{14}{24}$, $\frac{21}{36}$, $\frac{28}{48}$.

Worked Solution: Starter 6, Question 8

Question: Order these fractions in ascending order: $\frac{2}{8}$, $\frac{4}{6}$, $\frac{5}{12}$.

Worked Solution: Use denominator 24: $\frac{2}{8} = \frac{6}{24}$, $\frac{4}{6} = \frac{16}{24}$, and $\frac{5}{12} = \frac{10}{24}$. Since $6 < 10 < 16$, the order is

Worked Solution: Starter 6, Question 8

Question: Order these fractions in ascending order: $\frac{2}{8}$, $\frac{4}{6}$, $\frac{5}{12}$.

Worked Solution: Use denominator 24: $\frac{2}{8} = \frac{6}{24}$, $\frac{4}{6} = \frac{16}{24}$, and $\frac{5}{12} = \frac{10}{24}$. Since $6 < 10 < 16$, the order is $\frac{2}{8}$, $\frac{5}{12}$, $\frac{4}{6}$.

Worked Solution: Starter 6, Question 9

Question: Compare using $<$, $>$, or $=$: $\frac{9}{14} \square \frac{19}{28}$.

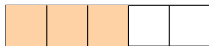
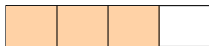
Worked Solution: Use denominator 28: $\frac{9}{14} = \frac{18}{28}$. Since $18 < 19$,

Worked Solution: Starter 6, Question 9

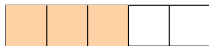
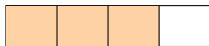
Question: Compare using $<$, $>$, or $=$: $\frac{9}{14} \square \frac{19}{28}$.

Worked Solution: Use denominator 28: $\frac{9}{14} = \frac{18}{28}$. Since $18 < 19$,
 $<$.

Starter 7



Starter 7



Worked Solution: Starter 7, Question 1

Question: Write the fraction represented by each bar.

Worked Solution: Count shaded parts and total parts. The bars show $\frac{3}{4}$, $\frac{3}{5}$, and $\frac{3}{8}$.

Worked Solution: Starter 7, Question 1

Question: Write the fraction represented by each bar.

Worked Solution: Count shaded parts and total parts. The bars show $\frac{3}{4}$, $\frac{3}{5}$, and $\frac{3}{8}$. $\frac{3}{4}$, $\frac{3}{5}$, $\frac{3}{8}$.

Worked Solution: Starter 7, Question 2

Question: Which is largest: $\frac{3}{4}$, $\frac{3}{5}$, $\frac{3}{8}$?

Worked Solution: All three have numerator 3. The smaller the denominator, the larger each equal part is. Since $4 < 5 < 8$, $\frac{3}{4}$ has the largest parts.

Worked Solution: Starter 7, Question 2

Question: Which is largest: $\frac{3}{4}$, $\frac{3}{5}$, $\frac{3}{8}$?

Worked Solution: All three have numerator 3. The smaller the denominator, the larger each equal part is. Since $4 < 5 < 8$, $\frac{3}{4}$ has the largest parts. $\frac{3}{4}$ is largest.

Worked Solution: Starter 7, Question 3

Question: (Extension) Explain why fractions with the same numerator change size when the denominator changes.

Worked Solution: The numerator counts the same number of equal parts. A bigger denominator means the whole is split into more equal parts, so each part is smaller. With the same number of parts, the total amount is smaller.

Worked Solution: Starter 7, Question 3

Question: (Extension) Explain why fractions with the same numerator change size when the denominator changes.

Worked Solution: The numerator counts the same number of equal parts. A bigger denominator means the whole is split into more equal parts, so each part is smaller. With the same number of parts, the total amount is smaller. The larger the denominator, the smaller each equal part is, so the fraction is smaller.

Worked Solution: Starter 7, Question 4

Question: Compare using $<$, $>$, or $=$: $\frac{5}{6}$ $\square$ $\frac{5}{9}$.

Worked Solution: Both have numerator 5. Since $6 < 9$, sixths are larger than ninths.

Worked Solution: Starter 7, Question 4

Question: Compare using $<$, $>$, or $=$: $\frac{5}{6}$ $\square$ $\frac{5}{9}$.

Worked Solution: Both have numerator 5. Since $6 < 9$, sixths are larger than ninths. $>$

Worked Solution: Starter 7, Question 5

Question: Fully simplify: $\frac{18}{24}$.

Worked Solution: Divide numerator and denominator by 6:
 $18 \div 6 = 3$ and $24 \div 6 = 4$.

Worked Solution: Starter 7, Question 5

Question: Fully simplify: $\frac{18}{24}$.

Worked Solution: Divide numerator and denominator by 6:

$$18 \div 6 = 3 \text{ and } 24 \div 6 = 4. \quad \frac{18}{24} = \frac{3}{4}.$$

Worked Solution: Starter 7, Question 6

Question: Fully simplify: $\frac{27}{36}$.

Worked Solution: Divide numerator and denominator by 9:
 $27 \div 9 = 3$ and $36 \div 9 = 4$.

Worked Solution: Starter 7, Question 6

Question: Fully simplify: $\frac{27}{36}$.

Worked Solution: Divide numerator and denominator by 9:

$$27 \div 9 = 3 \text{ and } 36 \div 9 = 4. \quad \frac{27}{36} = \frac{3}{4}.$$

Worked Solution: Starter 7, Question 7

Question: Write these as mixed numbers: $\frac{11}{4}$, $\frac{9}{2}$.

Worked Solution: $11 \div 4 = 2$ remainder 3, so $\frac{11}{4} = 2\frac{3}{4}$. $9 \div 2 = 4$ remainder 1, so $\frac{9}{2} = 4\frac{1}{2}$.

Worked Solution: Starter 7, Question 7

Question: Write these as mixed numbers: $\frac{11}{4}$, $\frac{9}{2}$.

Worked Solution: $11 \div 4 = 2$ remainder 3, so $\frac{11}{4} = 2\frac{3}{4}$. $9 \div 2 = 4$ remainder 1, so $\frac{9}{2} = 4\frac{1}{2}$. $2\frac{3}{4}$, $4\frac{1}{2}$.

Worked Solution: Starter 7, Question 8

Question: Convert to improper fractions: $2\frac{3}{5}$, $1\frac{7}{8}$.

Worked Solution: $2\frac{3}{5} = \frac{5 \times 2 + 3}{5} = \frac{13}{5}$. $1\frac{7}{8} = \frac{8 \times 1 + 7}{8} = \frac{15}{8}$.

Worked Solution: Starter 7, Question 8

Question: Convert to improper fractions: $2\frac{3}{5}$, $1\frac{7}{8}$.

Worked Solution: $2\frac{3}{5} = \frac{5 \times 2 + 3}{5} = \frac{13}{5}$. $1\frac{7}{8} = \frac{8 \times 1 + 7}{8} = \frac{15}{8}$. $\frac{13}{5}$, $\frac{15}{8}$.

Worked Solution: Starter 7, Question 9

Question: Which is bigger: $\frac{7}{10} \square \frac{7}{12}$?

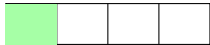
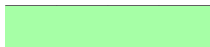
Worked Solution: Both have numerator 7. Since $10 < 12$, tenths are larger than twelfths.

Worked Solution: Starter 7, Question 9

Question: Which is bigger: $\frac{7}{10} \square \frac{7}{12}$?

Worked Solution: Both have numerator 7. Since $10 < 12$, tenths are larger than twelfths. $\frac{7}{10}$ is bigger.

Starter 8



1. Write the improper fraction shown by the diagram.
2. Write the mixed number represented by the green bars in the diagram.
3. Mark $1\frac{1}{4}$ and $2\frac{3}{4}$ on the number line.
4. Convert: $\frac{13}{5}$ to a mixed number.
5. Convert:

$$3\frac{2}{3}$$

to an improper fraction.

6. Fully simplify:

$$\frac{16}{40}$$

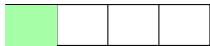
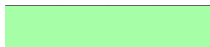
7. Which is greater:

$$\frac{4}{9} \square \frac{4}{11}$$

8. Order from smallest to largest:

$$\frac{6}{5}, \quad 1\frac{1}{2}, \quad \frac{7}{4}$$

Starter 8



1. Write the improper fraction shown by the diagram. $\frac{5}{4}$
2. Write the mixed number represented by the green bars in the diagram. $1\frac{1}{4}$
3. Mark $1\frac{1}{4}$ and $2\frac{3}{4}$ on the number line. At $1\frac{1}{4}$ and $2\frac{3}{4}$
4. Convert: $\frac{13}{5}$ to a mixed number. $2\frac{3}{5}$
5. Convert:

$$3\frac{2}{3}$$

to an improper fraction. $\frac{11}{3}$

6. Fully simplify:

$$\frac{16}{40}$$

$$\frac{2}{5}$$

7. Which is greater:

$$\frac{4}{9} \square \frac{4}{11}$$

$$\frac{4}{9}$$

8. Order from smallest to largest:

$$\frac{6}{5}, 1\frac{1}{2}, \frac{7}{4}$$

$$\frac{6}{5}, 1\frac{1}{2}, \frac{7}{4}$$

Worked Solution: Starter 8, Question 1

Question: Write the improper fraction shown by the diagram.

Worked Solution: The diagram shows two bars, each divided into quarters. The top bar is fully shaded: 4 quarters. The bottom bar has 1 quarter shaded. Total shaded quarters: $4 + 1 = 5$.

Worked Solution: Starter 8, Question 1

Question: Write the improper fraction shown by the diagram.

Worked Solution: The diagram shows two bars, each divided into quarters. The top bar is fully shaded: 4 quarters. The bottom bar has 1 quarter shaded. Total shaded quarters: $4 + 1 = 5$. $\frac{5}{4}$.

Worked Solution: Starter 8, Question 2

Question: Write the mixed number represented by the green bars in the diagram.

Worked Solution: The shaded amount is $\frac{5}{4}$. Since $\frac{4}{4} = 1$ whole, there is 1 whole and $\frac{1}{4}$ left over.

Worked Solution: Starter 8, Question 2

Question: Write the mixed number represented by the green bars in the diagram.

Worked Solution: The shaded amount is $\frac{5}{4}$. Since $\frac{4}{4} = 1$ whole, there is 1 whole and $\frac{1}{4}$ left over. $1\frac{1}{4}$.

Worked Solution: Starter 8, Question 3

Question: Mark $1\frac{1}{4}$ and $2\frac{3}{4}$ on the number line.

Worked Solution: Divide each unit on the number line into quarters. $1\frac{1}{4}$ is one quarter after 1, and $2\frac{3}{4}$ is three quarters after 2.

Worked Solution: Starter 8, Question 3

Question: Mark $1\frac{1}{4}$ and $2\frac{3}{4}$ on the number line.

Worked Solution: Divide each unit on the number line into quarters. $1\frac{1}{4}$ is one quarter after 1, and $2\frac{3}{4}$ is three quarters after 2. Mark at $1\frac{1}{4}$ and $2\frac{3}{4}$.

Worked Solution: Starter 8, Question 4

Question: Convert $\frac{13}{5}$ to a mixed number.

Worked Solution: Divide 13 by 5: $13 \div 5 = 2$ remainder 3. So there are 2 whole ones and $\frac{3}{5}$ left over.

Worked Solution: Starter 8, Question 4

Question: Convert $\frac{13}{5}$ to a mixed number.

Worked Solution: Divide 13 by 5: $13 \div 5 = 2$ remainder 3. So there are 2 whole ones and $\frac{3}{5}$ left over. $2\frac{3}{5}$.

Worked Solution: Starter 8, Question 5

Question: Convert $3\frac{2}{3}$ to an improper fraction.

Worked Solution: Multiply the whole part by the denominator and add the numerator: $3 \times 3 + 2 = 11$. Keep the denominator 3.

Worked Solution: Starter 8, Question 5

Question: Convert $3\frac{2}{3}$ to an improper fraction.

Worked Solution: Multiply the whole part by the denominator and add the numerator: $3 \times 3 + 2 = 11$. Keep the denominator 3.

$$\frac{11}{3}.$$

Worked Solution: Starter 8, Question 6

Question: Fully simplify $\frac{16}{40}$.

Worked Solution: Divide numerator and denominator by 8:
 $16 \div 8 = 2$ and $40 \div 8 = 5$.

Worked Solution: Starter 8, Question 6

Question: Fully simplify $\frac{16}{40}$.

Worked Solution: Divide numerator and denominator by 8:

$$16 \div 8 = 2 \text{ and } 40 \div 8 = 5. \quad \frac{16}{40} = \frac{2}{5}.$$

Worked Solution: Starter 8, Question 7

Question: Which is greater: $\frac{4}{9} \square \frac{4}{11}$?

Worked Solution: Both have numerator 4. Since $9 < 11$, ninths are larger than elevenths.

Worked Solution: Starter 8, Question 7

Question: Which is greater: $\frac{4}{9} \square \frac{4}{11}$?

Worked Solution: Both have numerator 4. Since $9 < 11$, ninths are larger than elevenths. $\frac{4}{9}$ is greater.

Worked Solution: Starter 8, Question 8

Question: Order from smallest to largest: $\frac{6}{5}$, $1\frac{1}{2}$, $\frac{7}{4}$.

Worked Solution: Use denominator 20: $\frac{6}{5} = \frac{24}{20}$, $1\frac{1}{2} = \frac{3}{2} = \frac{30}{20}$, and $\frac{7}{4} = \frac{35}{20}$. Since $24 < 30 < 35$,

Worked Solution: Starter 8, Question 8

Question: Order from smallest to largest: $\frac{6}{5}$, $1\frac{1}{2}$, $\frac{7}{4}$.

Worked Solution: Use denominator 20: $\frac{6}{5} = \frac{24}{20}$, $1\frac{1}{2} = \frac{3}{2} = \frac{30}{20}$, and $\frac{7}{4} = \frac{35}{20}$. Since $24 < 30 < 35$, $\frac{6}{5}$, $1\frac{1}{2}$, $\frac{7}{4}$.

Starter 9

1. Write the fractions shown by the bars.

$$\frac{5}{6} \square \frac{5}{8}$$

2. Which is larger:

3. Write 3 fractions equivalent to:

$$\frac{2}{5}$$

4. Fully simplify:

$$\frac{54}{72}$$

5. Convert to mixed

6. Convert to improper fractions:

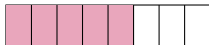
$$4\frac{1}{3}, \quad 2\frac{5}{6}$$

7. Order from smallest to largest:

$$\frac{123}{1234}, \quad \frac{321}{1234}, \quad \frac{111}{1234}$$

8. Challenge:

Which is larger?



Starter 9

1. Write the fractions shown by the bars. $\frac{5}{6}$
and $\frac{5}{8}$

2. Which is larger:

$$\frac{5}{6} \square \frac{5}{8}$$

>

3. Write 3 fractions equivalent to:

$$\frac{2}{5}$$

$$\frac{4}{10}, \frac{6}{15}, \frac{8}{20}$$

4. Fully simplify:

$$\frac{54}{72}$$

$$\frac{3}{4}$$

5. Convert to mixed

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

6. Convert to improper fractions:

$$4\frac{1}{3}, 2\frac{5}{6}$$

$$\frac{13}{3}, \frac{17}{6}$$

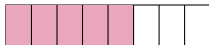
7. Order from smallest to largest:

$$\frac{123}{1234}, \frac{321}{1234}, \frac{111}{1234}$$

$$\frac{111}{1234}, \frac{123}{1234}, \frac{321}{1234}$$

8. Challenge:

Which is larger?



Worked Solution: Starter 9, Question 1

Question: Write the fractions shown by the bars.

Worked Solution: The first bar has 5 shaded parts out of 6; the second has 5 shaded parts out of 8.

Worked Solution: Starter 9, Question 1

Question: Write the fractions shown by the bars.

Worked Solution: The first bar has 5 shaded parts out of 6; the second has 5 shaded parts out of 8. $\frac{5}{6}$ and $\frac{5}{8}$.

Worked Solution: Starter 9, Question 2

Question: Which is larger: $\frac{5}{6}$ $\square$ $\frac{5}{8}$?

Worked Solution: Both have numerator 5. Since $6 < 8$, sixths are larger than eighths.

Worked Solution: Starter 9, Question 2

Question: Which is larger: $\frac{5}{6}$ $\square$ $\frac{5}{8}$?

Worked Solution: Both have numerator 5. Since $6 < 8$, sixths are larger than eighths. $>$

Worked Solution: Starter 9, Question 3

Question: Write 3 fractions equivalent to $\frac{2}{5}$.

Worked Solution: Multiply numerator and denominator by 2, 3, and 4: $\frac{4}{10}$, $\frac{6}{15}$, $\frac{8}{20}$.

Worked Solution: Starter 9, Question 3

Question: Write 3 fractions equivalent to $\frac{2}{5}$.

Worked Solution: Multiply numerator and denominator by 2, 3, and 4: $\frac{4}{10}$, $\frac{6}{15}$, $\frac{8}{20}$. $\frac{4}{10}$, $\frac{6}{15}$, $\frac{8}{20}$.

Worked Solution: Starter 9, Question 4

Question: Fully simplify $\frac{54}{72}$.

Worked Solution: Divide numerator and denominator by 18:
 $54 \div 18 = 3$ and $72 \div 18 = 4$.

Worked Solution: Starter 9, Question 4

Question: Fully simplify $\frac{54}{72}$.

Worked Solution: Divide numerator and denominator by 18:

$$54 \div 18 = 3 \text{ and } 72 \div 18 = 4. \quad \frac{54}{72} = \frac{3}{4}.$$

Worked Solution: Starter 9, Question 5

Question: Convert to mixed numbers: $\frac{17}{6}$, $\frac{22}{9}$.

Worked Solution: $17 \div 6 = 2$ remainder 5, so $\frac{17}{6} = 2\frac{5}{6}$.
 $22 \div 9 = 2$ remainder 4, so $\frac{22}{9} = 2\frac{4}{9}$.

Worked Solution: Starter 9, Question 5

Question: Convert to mixed numbers: $\frac{17}{6}$, $\frac{22}{9}$.

Worked Solution: $17 \div 6 = 2$ remainder 5, so $\frac{17}{6} = 2\frac{5}{6}$.
 $22 \div 9 = 2$ remainder 4, so $\frac{22}{9} = 2\frac{4}{9}$. $2\frac{5}{6}$, $2\frac{4}{9}$.

Worked Solution: Starter 9, Question 6

Question: Convert to improper fractions: $4\frac{1}{3}$, $2\frac{5}{6}$.

Worked Solution: $4\frac{1}{3} = \frac{3 \times 4 + 1}{3} = \frac{13}{3}$. $2\frac{5}{6} = \frac{6 \times 2 + 5}{6} = \frac{17}{6}$.

Worked Solution: Starter 9, Question 6

Question: Convert to improper fractions: $4\frac{1}{3}$, $2\frac{5}{6}$.

Worked Solution: $4\frac{1}{3} = \frac{3 \times 4 + 1}{3} = \frac{13}{3}$. $2\frac{5}{6} = \frac{6 \times 2 + 5}{6} = \frac{17}{6}$. $\frac{13}{3}$, $\frac{17}{6}$.

Worked Solution: Starter 9, Question 7

Question: Order from smallest to largest: $\frac{123}{1234}$, $\frac{321}{1234}$, $\frac{111}{1234}$.

Worked Solution: All fractions have the same denominator, so compare numerators: $111 < 123 < 321$.

Worked Solution: Starter 9, Question 7

Question: Order from smallest to largest: $\frac{123}{1234}$, $\frac{321}{1234}$, $\frac{111}{1234}$.

Worked Solution: All fractions have the same denominator, so compare numerators: $111 < 123 < 321$. $\frac{111}{1234}$, $\frac{123}{1234}$, $\frac{321}{1234}$.

Worked Solution: Starter 9, Question 8

Question: Challenge: Which is larger? $2\frac{1}{4} \square 2\frac{2}{5}$.

Worked Solution: Both mixed numbers have whole part 2, so compare the fractional parts $\frac{1}{4}$ and $\frac{2}{5}$. Use denominator 20:
 $\frac{1}{4} = \frac{5}{20}$ and $\frac{2}{5} = \frac{8}{20}$. Since $\frac{8}{20} > \frac{5}{20}$,

Worked Solution: Starter 9, Question 8

Question: Challenge: Which is larger? $2\frac{1}{4} \square 2\frac{2}{5}$.

Worked Solution: Both mixed numbers have whole part 2, so compare the fractional parts $\frac{1}{4}$ and $\frac{2}{5}$. Use denominator 20:
 $\frac{1}{4} = \frac{5}{20}$ and $\frac{2}{5} = \frac{8}{20}$. Since $\frac{8}{20} > \frac{5}{20}$, $2\frac{2}{5}$ is larger.