Name & Surname: _____ Class: _____ Date: _____

Same-Size Slices

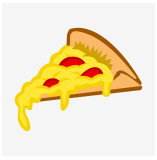
Add and subtract fractions with unlike bottoms

About 30 minutes Level ★★★☆☆

Rename First, Then Add

You can only add pieces that are the **same size**. With **unlike denominators**, find a **common denominator**, make equivalent fractions, then add the tops.

- Find a common denominator both bottoms fit into, like 12 for 3 and 4.
- Multiply top and bottom by the same number to make equivalent fractions.
- Add or subtract tops only, keep the bottom, then simplify.



Task A

/2

Follow the steps to rename with a common denominator.

WORKED EXAMPLE

Work out $\frac{1}{2} + \frac{1}{3}$

1. LCD of 2 and 3 is 6
2. $\frac{1}{2} = \frac{3}{6}$ and $\frac{1}{3} = \frac{2}{6}$
3. $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

Answer: $\frac{5}{6}$

YOUR TURN

Work out $\frac{1}{3} + \frac{1}{4}$

Answer: _____

WORKED EXAMPLE

Work out $\frac{3}{4} - \frac{1}{3}$

1. Multiples give LCD 12
2. $\frac{3}{4} = \frac{9}{12}$ and $\frac{1}{3} = \frac{4}{12}$
3. $\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$

Answer: $\frac{5}{12}$

YOUR TURN

Work out $2\frac{1}{4} + 1\frac{1}{2}$

Answer: _____

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Practice Adding Pieces

Practice adding fractions by renaming them first.

Key words

unlike denominators: different bottom numbers, so different piece sizes

common denominator: same bottom number shared by fractions

equivalent fractions: different cuts that show the same amount

numerator: top number that counts pieces

mixed number: a whole number with a fraction part

Task B

/10

Solve each one. Show equivalent fractions first.

WARM UP

1 Work out $\frac{1}{2} + \frac{1}{4}$

Answer: _____

2 Work out $\frac{1}{4} + \frac{3}{8}$

Answer: _____

3 Work out $\frac{2}{3} + \frac{1}{6}$

Answer: _____

4 Work out $\frac{3}{10} + \frac{1}{5}$

Answer: _____

PRACTICE

5 Work out $\frac{2}{3} + \frac{1}{4}$ using **twelfths**

Answer: _____

6 Work out $\frac{3}{4} + \frac{2}{3}$

Answer: _____

7 Work out $\frac{2}{3} + \frac{5}{4}$

Answer: _____

PROBLEM SOLVING

8 A student mixes $\frac{1}{2}$ cup of water and $\frac{1}{3}$ cup of juice. How many cups in total?

Answer: _____

9 A student reads $\frac{3}{5}$ hour in the morning and $\frac{1}{2}$ hour in the evening. How long in total? Give your answer in hours.

Answer: _____

10 Explain how you know $\frac{1}{2} + \frac{1}{3}$ cannot equal $\frac{2}{5}$.

Answer: _____

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Subtract and mix it

Practice subtraction and mixed numbers with unlike bottoms.

Task C

/10

Rename to a common denominator, then add or subtract.

WARM UP

1 Work out $\frac{3}{4} - \frac{1}{2}$

Answer: _____

2 Work out $\frac{5}{6} - \frac{1}{3}$

Answer: _____

3 Work out $\frac{7}{8} - \frac{1}{4}$

Answer: _____

PRACTICE

4 Work out $\frac{3}{4} - \frac{1}{3}$

Answer: _____

5 Work out $\frac{2}{3} - \frac{1}{2}$

Answer: _____

6 Work out $2\frac{1}{4} + 1\frac{1}{2}$

Answer: _____

7 Work out $3\frac{1}{3} - 1\frac{1}{4}$. Refer to the same whole.

Answer: _____

PROBLEM SOLVING

8 A recipe needs $2\frac{1}{2}$ cups of mix, but a student has used $1\frac{1}{3}$ cups. How much is left? Give your answer in cups.

Answer: _____

9 Work out $2\frac{1}{4} - 1\frac{2}{3}$. Trade 1 whole if needed.

Answer: _____

10 A student says $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$. Use $\frac{1}{2}$ as a **benchmark** to explain why this is wrong.

Answer: _____

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Who Is Right?

Decide which idea about unlike fractions is correct.

Task D

/3

Read the ideas about equivalent fractions and judge each one.



Student A

How do we work out $\frac{2}{5} + \frac{1}{2}$?

Add tops and bottoms: 2 + 1 over 5 + 2 = $\frac{3}{7}$.



Student B

Rename first: $\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$.



Student C

Change 5 to 10 but keep the top: $\frac{2}{10} + \frac{1}{10} = \frac{3}{10}$.



Student D

What do you think of each idea? Why?

Student B: .....

Student C: .....

Student D: .....

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See the Pieces

Use bars and number lines to see equivalent amounts.

Task E

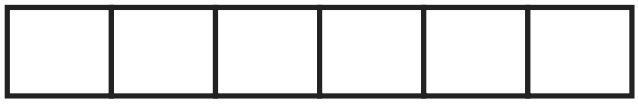
/4

Shade, name, or compare these fraction bars.

1



$= \frac{1}{2}$

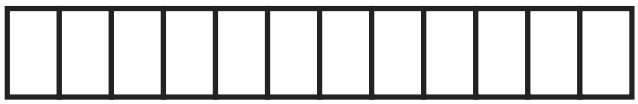


$= \frac{\square}{6}$

2



$= \frac{3}{4}$



$= \frac{\square}{12}$

3



$\frac{2}{3}$



$\frac{3}{4}$

$\frac{2}{3} \square \frac{3}{4}$ Write <, > or =

4



$\frac{2}{5}$



$\frac{3}{7}$

$\frac{2}{5} \square \frac{3}{7}$ Write <, > or =

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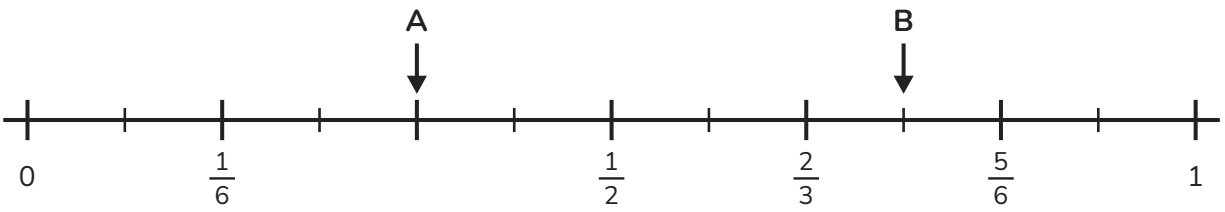
Same-Size Slices

↑↓ Task F

/6

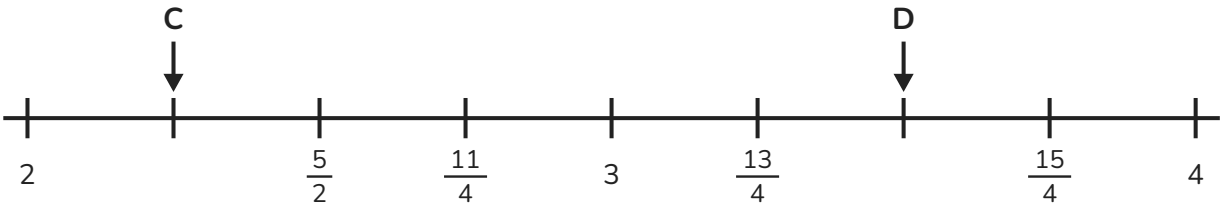
Read and mark fractions on the number line.

1



A = ☐ **B =** ☐ Draw an arrow to show: $\frac{5}{12}$

2



C = ☐ **D =** ☐ Draw an arrow to show: $\frac{15}{4}$

How did I do?

Circle a face for each line.

I can rename unlike fractions with a common denominator	☹ 😐 ☺
I can add and subtract fractions and mixed numbers	☹ 😐 ☺
I can estimate to check if my answer makes sense	☹ 😐 ☺

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Answer sheet: Same-Size Slices

Task A

1. $\frac{7}{12}$
2. $3\frac{3}{4}$

Task B

1. $\frac{3}{4}$
2. $\frac{5}{8}$
3. $\frac{5}{6}$
4. $\frac{1}{2}$
5. $\frac{11}{12}$
6. $1\frac{5}{12}$
7. $1\frac{11}{12}$
8. $\frac{5}{6}$
9. $1\frac{1}{10}$
10. The sum must be more than $\frac{1}{2}$, but $\frac{2}{5}$ is less than $\frac{1}{2}$, so it is too small.

Task C

1. $\frac{1}{4}$
2. $\frac{1}{2}$
3. $\frac{5}{8}$
4. $\frac{5}{12}$
5. $\frac{1}{6}$
6. $3\frac{3}{4}$
7. $2\frac{1}{12}$
8. $1\frac{1}{6}$
9. $\frac{7}{12}$
10. The sum must be greater than $\frac{1}{2}$, but $\frac{3}{7}$ is less than $\frac{1}{2}$, so adding across gives an answer that is too small.

Task D

Student B: not right

Student C: right

Student D: not right

Student C is correct because $\frac{2}{5} = \frac{4}{10}$ and $\frac{1}{2} = \frac{5}{10}$, so $\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$. Adding bottoms counts different-size pieces, and changing only the bottom does not make an equivalent fraction.

Task E

1. $\frac{1}{2} = \frac{3}{6}$ (shade 3 parts)
2. $\frac{3}{4} = \frac{9}{12}$ (shade 9 parts)
3. $\frac{2}{3} < \frac{3}{4}$
4. $\frac{2}{5} < \frac{3}{7}$

Task F

1. A = $\frac{1}{3}$; B = $\frac{3}{4}$; arrows at $\frac{5}{12}$
2. C = $\frac{9}{4}$; D = $\frac{7}{2}$; arrows at $\frac{15}{4}$

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