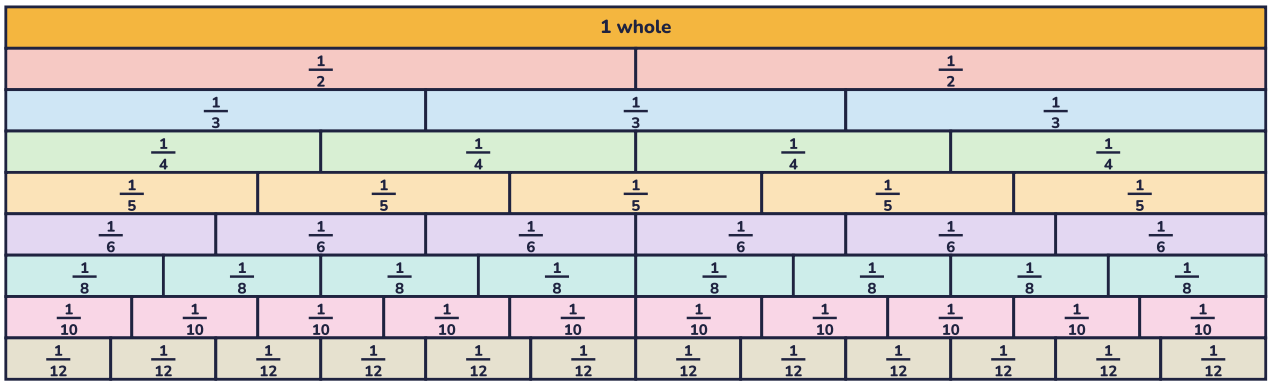
CHEAT SHEET · FRACTIONS

Acorn & Ink

Fractions made easy

Equal parts! In $\frac{3}{5}$ the whole is cut into **5** equal parts (bottom number) and you have **3** (top number).



Of an amount

Divide by the bottom, times by the top.

$\frac{3}{5}$ of 40: 40 ÷ 5 = 8, 8 × 3 = **24**

Equivalent and simplest form

Do the same to the top and the bottom.

$\frac{2}{3} = \frac{8}{12}$ (× 4) $\frac{18}{24} = \frac{3}{4}$ (÷ 6)

Comparing

Make the bottom numbers the same.

$\frac{2}{3} = \frac{10}{15}$ is bigger than $\frac{3}{5} = \frac{9}{15}$

Mixed numbers

11 ÷ 4 = 2 r 3, so $\frac{11}{4} = 2\frac{3}{4}$

3 × 5 + 2 = 17, so $3\frac{2}{5} = \frac{17}{5}$

Add and subtract

Same bottoms first, then the tops.

$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \mathbf{\frac{7}{12}}$

Multiply and divide

$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ (top × top, bottom × bottom)

$\frac{1}{3} \div 2 = \frac{1}{6}$ (times the bottom by 2)

Working backwards

$\frac{1}{4}$ is 9, so the whole is 9 × 4 = **36**

$\frac{2}{5}$ is 14, so $\frac{1}{5}$ is 7 and the whole is **35**

Watch out

Never add the bottom numbers.

$\frac{1}{8}$ is **smaller** than $\frac{1}{4}$ (more, smaller parts).

Fractions, decimals and percentages

$\frac{1}{2}$ = 0.5 = **50%**	$\frac{1}{4}$ = 0.25 = **25%**	$\frac{3}{4}$ = 0.75 = **75%**	$\frac{1}{5}$ = 0.2 = **20%**
$\frac{1}{10}$ = 0.1 = **10%**	$\frac{1}{8}$ = 0.125 = **12.5%**	$\frac{3}{8}$ = 0.375 = **37.5%**	$\frac{1}{100}$ = 0.01 = **1%**

FRACTIONS · AGES 9–11

Equivalent fractions and simplifying

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Multiply or divide the top and the bottom by the same number.

Name _____ Date _____ Score _____ / 18

Find the missing number

1. $\frac{7}{8} = \frac{\square}{32}$

2. $\frac{1}{2} = \frac{\square}{10}$

3. $\frac{1}{4} = \frac{\square}{28}$

4. $\frac{2}{5} = \frac{20}{\square}$

5. $\frac{1}{12} = \frac{\square}{72}$

6. $\frac{2}{3} = \frac{14}{\square}$

7. $\frac{1}{2} = \frac{\square}{18}$

8. $\frac{5}{12} = \frac{\square}{60}$

Simplify fully

Divide the top and bottom by the same number until you can't go any further.

9. $\frac{56}{96} = \square$

10. $\frac{49}{84} = \square$

11. $\frac{88}{99} = \square$

12. $\frac{2}{8} = \square$

13. $\frac{42}{72} = \square$

14. $\frac{25}{30} = \square$

15. $\frac{24}{60} = \square$

16. $\frac{30}{40} = \square$

17. $\frac{9}{54} = \square$

18. $\frac{40}{96} = \square$

FRACTIONS · AGES 9–11

Mixed numbers

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Change improper fractions into mixed numbers, and mixed numbers into improper fractions.

Name _____ Date _____ Score _____ / 16

Improper fraction to mixed number How many wholes? What is left over?

1. $\frac{37}{11} =$ ☐
2. $\frac{13}{3} =$ ☐
3. $\frac{17}{6} =$ ☐
4. $\frac{8}{5} =$ ☐
5. $\frac{47}{11} =$ ☐
6. $\frac{53}{8} =$ ☐
7. $\frac{8}{3} =$ ☐
8. $\frac{43}{10} =$ ☐

Mixed number to improper fraction Wholes × bottom number, then add the top.

9. $3\frac{1}{5} =$ ☐
10. $1\frac{1}{12} =$ ☐
11. $4\frac{2}{3} =$ ☐
12. $2\frac{1}{2} =$ ☐
13. $1\frac{1}{8} =$ ☐
14. $3\frac{7}{12} =$ ☐
15. $1\frac{3}{10} =$ ☐
16. $6\frac{4}{11} =$ ☐

FRACTIONS · AGES 9–11

Add and subtract fractions

Make the bottom numbers the same first. Give answers in their simplest form, and write answers bigger than 1 as mixed numbers.

Name _____ Date _____ Score _____ / 16

One bottom number fits into the other

1. $\frac{5}{8} - \frac{1}{2} =$ ☐

2. $\frac{7}{12} + \frac{1}{4} =$ ☐

3. $\frac{1}{9} + \frac{1}{3} =$ ☐

4. $\frac{7}{9} - \frac{1}{3} =$ ☐

5. $\frac{1}{6} + \frac{7}{18} =$ ☐

6. $\frac{5}{6} + \frac{2}{3} =$ ☐

Different bottom numbers

7. $\frac{2}{5} - \frac{1}{3} =$ ☐

8. $\frac{1}{2} - \frac{4}{9} =$ ☐

9. $\frac{5}{9} - \frac{1}{4} =$ ☐

10. $\frac{1}{4} + \frac{2}{5} =$ ☐

11. $\frac{5}{7} - \frac{1}{4} =$ ☐

12. $\frac{1}{5} + \frac{1}{4} =$ ☐

Mixed numbers

13. $3\frac{3}{5} + 3\frac{2}{3} =$ ☐

14. $1\frac{1}{3} + 2\frac{1}{6} =$ ☐

15. $1\frac{1}{4} + 2\frac{5}{6} =$ ☐

16. $4\frac{1}{3} + 3\frac{1}{2} =$ ☐

FRACTIONS · AGES 9–11

Multiply and divide

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Give answers in their simplest form. Write answers bigger than 1 as mixed numbers.

Name _____ Date _____ Score _____ / 16

Multiply by a whole number

1. $\frac{1}{2} \times 3 =$ ☐

2. $\frac{1}{8} \times 3 =$ ☐

3. $3\frac{1}{3} \times 2 =$ ☐

4. $\frac{3}{8} \times 5 =$ ☐

5. $\frac{3}{5} \times 5 =$ ☐

6. $\frac{8}{9} \times 3 =$ ☐

Multiply two fractions Tops times tops, bottoms times bottoms.

7. $\frac{1}{2} \times \frac{5}{6} =$ ☐

8. $\frac{1}{6} \times \frac{1}{2} =$ ☐

9. $\frac{5}{6} \times \frac{2}{3} =$ ☐

10. $\frac{5}{6} \times \frac{5}{6} =$ ☐

11. $\frac{2}{3} \times \frac{1}{2} =$ ☐

12. $\frac{2}{3} \times \frac{2}{3} =$ ☐

Divide by a whole number

13. $\frac{1}{2} \div 3 =$ ☐

14. $\frac{3}{8} \div 2 =$ ☐

15. $\frac{3}{8} \div 4 =$ ☐

16. $\frac{3}{5} \div 4 =$ ☐

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Fractions of amounts

Divide by the bottom number, then times by the top number.

Name _____ Date _____ Score _____ / 16

1. $\frac{2}{5}$ of 95 = _____
2. $\frac{2}{3}$ of 63 = _____
3. $\frac{5}{6}$ of 132 = _____
4. $\frac{1}{6}$ of 24 = _____
5. $\frac{9}{10}$ of 120 = _____
6. $\frac{1}{4}$ of 72 = _____
7. $\frac{3}{10}$ of 190 = _____
8. $\frac{6}{7}$ of 42 = _____
9. $\frac{5}{6}$ of 54 = _____
10. $\frac{4}{7}$ of 84 = _____
11. $\frac{2}{3}$ of 69 = _____
12. $\frac{5}{8}$ of 112 = _____

Working backwards Find one part first, then the whole.

13. Ruby spent $\frac{1}{3}$ of their savings on a game. The game cost £10. How much were the savings? _____

14. $\frac{1}{6}$ of a ribbon is 5 cm long. How long is the whole ribbon? _____

15. A bottle is $\frac{7}{8}$ full. It has 21 ml of water in it. How much does the full bottle hold? _____

16. Mia has read $\frac{1}{4}$ of a book. That's 14 pages. How many pages are in the book? _____

Fractions, decimals and percentages

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Each row shows one amount. Fill in the two missing ways of writing it.

Name _____ Date _____ Score _____ / 20

Fraction	Decimal	Percentage
	0.16	
		20%
$\frac{7}{10}$		
$\frac{71}{100}$		
	0.02	
		1%
		40%
$\frac{7}{20}$		
	0.1	
$\frac{1}{20}$		

A fraction is a division: $\frac{3}{8} = 3 \div 8 = 0.375$. Write fractions in their simplest form.

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Equivalent fractions and simplifying

Answers are shown in red.

Name _____ Date _____

Find the missing number

1. $\frac{7}{8} = \frac{\boxed{28}}{32}$
2. $\frac{1}{2} = \frac{\boxed{5}}{10}$
3. $\frac{1}{4} = \frac{\boxed{7}}{28}$
4. $\frac{2}{5} = \frac{20}{\boxed{50}}$
5. $\frac{1}{12} = \frac{\boxed{6}}{72}$
6. $\frac{2}{3} = \frac{14}{\boxed{21}}$
7. $\frac{1}{2} = \frac{\boxed{9}}{18}$
8. $\frac{5}{12} = \frac{\boxed{25}}{60}$

Simplify fully

Divide the top and bottom by the same number until you can't go any further.

9. $\frac{56}{96} = \boxed{\frac{7}{12}}$
10. $\frac{49}{84} = \boxed{\frac{7}{12}}$
11. $\frac{88}{99} = \boxed{\frac{8}{9}}$
12. $\frac{2}{8} = \boxed{\frac{1}{4}}$
13. $\frac{42}{72} = \boxed{\frac{7}{12}}$
14. $\frac{25}{30} = \boxed{\frac{5}{6}}$
15. $\frac{24}{60} = \boxed{\frac{2}{5}}$
16. $\frac{30}{40} = \boxed{\frac{3}{4}}$
17. $\frac{9}{54} = \boxed{\frac{1}{6}}$
18. $\frac{40}{96} = \boxed{\frac{5}{12}}$

Mixed numbers

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Answers are shown in red.

Name _____ Date _____

Improper fraction to mixed number How many wholes? What is left over?

1. $\frac{37}{11} = 3\frac{4}{11}$
2. $\frac{13}{3} = 4\frac{1}{3}$
3. $\frac{17}{6} = 2\frac{5}{6}$
4. $\frac{8}{5} = 1\frac{3}{5}$
5. $\frac{47}{11} = 4\frac{3}{11}$
6. $\frac{53}{8} = 6\frac{5}{8}$
7. $\frac{8}{3} = 2\frac{2}{3}$
8. $\frac{43}{10} = 4\frac{3}{10}$

Mixed number to improper fraction Wholes × bottom number, then add the top.

9. $3\frac{1}{5} = \frac{16}{5}$
10. $1\frac{1}{12} = \frac{13}{12}$
11. $4\frac{2}{3} = \frac{14}{3}$
12. $2\frac{1}{2} = \frac{5}{2}$
13. $1\frac{1}{8} = \frac{9}{8}$
14. $3\frac{7}{12} = \frac{43}{12}$
15. $1\frac{3}{10} = \frac{13}{10}$
16. $6\frac{4}{11} = \frac{70}{11}$

Add and subtract fractions

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Answers are shown in red.

Name _____ Date _____

One bottom number fits into the other

1. $\frac{5}{8} - \frac{1}{2} = \boxed{\frac{1}{8}}$

2. $\frac{7}{12} + \frac{1}{4} = \boxed{\frac{5}{6}}$

3. $\frac{1}{9} + \frac{1}{3} = \boxed{\frac{4}{9}}$

4. $\frac{7}{9} - \frac{1}{3} = \boxed{\frac{4}{9}}$

5. $\frac{1}{6} + \frac{7}{18} = \boxed{\frac{5}{9}}$

6. $\frac{5}{6} + \frac{2}{3} = \boxed{1\frac{1}{2}}$

Different bottom numbers

7. $\frac{2}{5} - \frac{1}{3} = \boxed{\frac{1}{15}}$

8. $\frac{1}{2} - \frac{4}{9} = \boxed{\frac{1}{18}}$

9. $\frac{5}{9} - \frac{1}{4} = \boxed{\frac{11}{36}}$

10. $\frac{1}{4} + \frac{2}{5} = \boxed{\frac{13}{20}}$

11. $\frac{5}{7} - \frac{1}{4} = \boxed{\frac{13}{28}}$

12. $\frac{1}{5} + \frac{1}{4} = \boxed{\frac{9}{20}}$

Mixed numbers

13. $3\frac{3}{5} + 3\frac{2}{3} = \boxed{7\frac{4}{15}}$

14. $1\frac{1}{3} + 2\frac{1}{6} = \boxed{3\frac{1}{2}}$

15. $1\frac{1}{4} + 2\frac{5}{6} = \boxed{4\frac{1}{12}}$

16. $4\frac{1}{3} + 3\frac{1}{2} = \boxed{7\frac{5}{6}}$

Multiply and divide

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Answers are shown in red.

Name _____ Date _____

Multiply by a whole number

1. $\frac{1}{2} \times 3 =$ **$1\frac{1}{2}$**
2. $\frac{1}{8} \times 3 =$ **$\frac{3}{8}$**
3. $3\frac{1}{3} \times 2 =$ **$6\frac{2}{3}$**
4. $\frac{3}{8} \times 5 =$ **$1\frac{7}{8}$**
5. $\frac{3}{5} \times 5 =$ **3**
6. $\frac{8}{9} \times 3 =$ **$2\frac{2}{3}$**

Multiply two fractions Tops times tops, bottoms times bottoms.

7. $\frac{1}{2} \times \frac{5}{6} =$ **$\frac{5}{12}$**
8. $\frac{1}{6} \times \frac{1}{2} =$ **$\frac{1}{12}$**
9. $\frac{5}{6} \times \frac{2}{3} =$ **$\frac{5}{9}$**
10. $\frac{5}{6} \times \frac{5}{6} =$ **$\frac{25}{36}$**
11. $\frac{2}{3} \times \frac{1}{2} =$ **$\frac{1}{3}$**
12. $\frac{2}{3} \times \frac{2}{3} =$ **$\frac{4}{9}$**

Divide by a whole number

13. $\frac{1}{2} \div 3 =$ **$\frac{1}{6}$**
14. $\frac{3}{8} \div 2 =$ **$\frac{3}{16}$**
15. $\frac{3}{8} \div 4 =$ **$\frac{3}{32}$**
16. $\frac{3}{5} \div 4 =$ **$\frac{3}{20}$**

Acorn & Ink

Fractions of amounts

Answers are shown in red.

Name _____ Date _____

1. $\frac{2}{5}$ of 95 = **38**
2. $\frac{2}{3}$ of 63 = **42**
3. $\frac{5}{6}$ of 132 = **110**
4. $\frac{1}{6}$ of 24 = **4**
5. $\frac{9}{10}$ of 120 = **108**
6. $\frac{1}{4}$ of 72 = **18**
7. $\frac{3}{10}$ of 190 = **57**
8. $\frac{6}{7}$ of 42 = **36**
9. $\frac{5}{6}$ of 54 = **45**
10. $\frac{4}{7}$ of 84 = **48**
11. $\frac{2}{3}$ of 69 = **46**
12. $\frac{5}{8}$ of 112 = **70**

Working backwards Find one part first, then the whole.

13. Ruby spent $\frac{1}{3}$ of their savings on a game. The game cost £10. How much were the savings? **£30**

14. $\frac{1}{6}$ of a ribbon is 5 cm long. How long is the whole ribbon? **30 cm**

15. A bottle is $\frac{7}{8}$ full. It has 21 ml of water in it. How much does the full bottle hold? **24 ml**

16. Mia has read $\frac{1}{4}$ of a book. That's 14 pages. How many pages are in the book? **56 pages**

Acorn & Ink

Fractions, decimals and percentages

Answers are shown in red.

Name _____ Date _____

Fraction	Decimal	Percentage
$\frac{4}{25}$	0.16	16%
$\frac{1}{5}$	0.2	20%
$\frac{7}{10}$	0.7	70%
$\frac{71}{100}$	0.71	71%
$\frac{1}{50}$	0.02	2%
$\frac{1}{100}$	0.01	1%
$\frac{2}{5}$	0.4	40%
$\frac{7}{20}$	0.35	35%
$\frac{1}{10}$	0.1	10%
$\frac{1}{20}$	0.05	5%

A fraction is a division: $\frac{3}{8} = 3 \div 8 = 0.375$. Write fractions in their simplest form.