CHEAT SHEET · FRACTIONS

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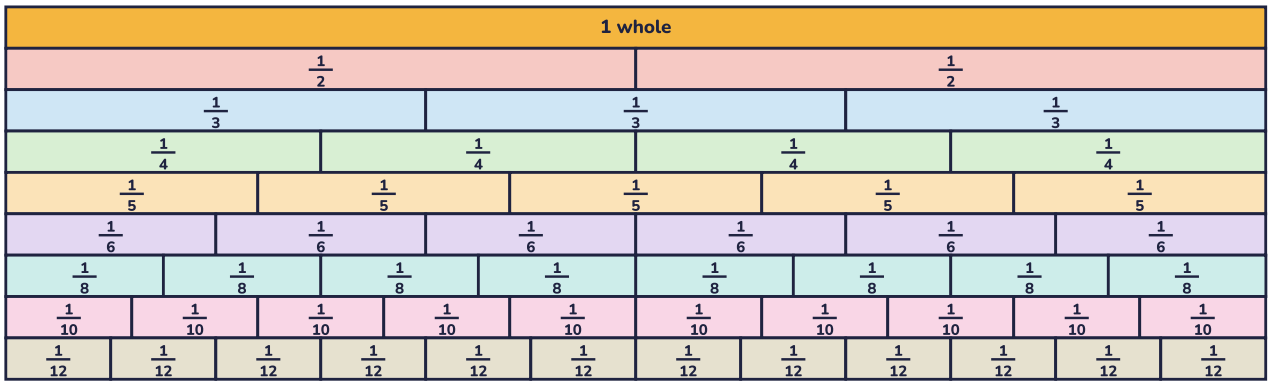
Fractions made easy

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 11–14

The four operations

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Give each answer in its simplest form. Write answers bigger than 1 (or less than −1) as mixed numbers.

Name _____ Date _____ Score _____ / 16

1. $1\frac{3}{5} \times \frac{3}{4} =$ ☐

2. $2\frac{1}{2} \div 2\frac{1}{2} =$ ☐

3. $\frac{9}{5} \times \frac{4}{9} =$ ☐

4. $1\frac{5}{6} - 1\frac{1}{5} =$ ☐

5. $3\frac{1}{2} \div 1\frac{1}{6} =$ ☐

6. $\frac{5}{6} \div 2\frac{2}{5} =$ ☐

7. $\frac{1}{6} \times 1\frac{4}{5} =$ ☐

8. $\frac{1}{8} - \frac{3}{8} =$ ☐

9. $-2\frac{5}{6} - \frac{5}{6} =$ ☐

10. $3\frac{5}{8} + \frac{1}{12} =$ ☐

11. $-\frac{13}{6} \times 3\frac{5}{6} =$ ☐

12. $-\frac{1}{3} \div \frac{4}{9} =$ ☐

13. $\frac{3}{4} + \frac{1}{2} =$ ☐

14. $\frac{5}{3} - \frac{11}{6} =$ ☐

15. $1\frac{1}{6} + \frac{7}{10} =$ ☐

16. $\frac{11}{6} + 2\frac{1}{5} =$ ☐

Change mixed numbers to improper fractions first. To divide, turn the second fraction upside down and multiply.

Fractions of and as fractions

Use fractions as operators, and write one amount as a fraction of another.

Name _____ Date _____ Score _____ / 18

Fractions of amounts Some of these fractions are bigger than 1.

1. $\frac{1}{5}$ of 75 = _____
2. $\frac{1}{8}$ of 48 = _____
3. $2\frac{1}{3}$ of 27 = _____
4. $\frac{7}{12}$ of 168 = _____
5. $1\frac{3}{4}$ of 24 = _____
6. $\frac{2}{3}$ of 57 = _____
7. $\frac{7}{9}$ of 108 = _____
8. $1\frac{1}{3}$ of 42 = _____
9. $2\frac{1}{2}$ of 14 = _____
10. $\frac{3}{5}$ of 85 = _____

Write the first amount as a fraction of the second Simplest form.

11. 135 minutes as a fraction of an hour
12. 21 as a fraction of 9
13. 500 ml as a fraction of a litre
14. 30 minutes as a fraction of an hour
15. 55 cm as a fraction of a metre
16. 8 as a fraction of 20
17. 250 g as a fraction of a kilogram
18. 190p as a fraction of £2

Make the units match first: 1 hour = 60 minutes, 1 m = 100 cm, £1 = 100p, 1 kg = 1,000 g and 1 litre = 1,000 ml.

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Fractions and decimals

Every decimal on this sheet stops, so you can write it exactly as a fraction.

Name _____ Date _____ Score _____ / 20

Decimal to fraction Simplest form. Use an improper fraction if it's bigger than 1.

1. 0.75 = ☐
2. 0.1 = ☐
3. 1.64 = ☐
4. 0.23 = ☐
5. 0.7 = ☐
6. 0.54 = ☐
7. 0.8 = ☐
8. 2.5 = ☐
9. 0.25 = ☐
10. 0.6 = ☐

Fraction to decimal Divide the top by the bottom.

11. $\frac{329}{100}$ = _____
12. $\frac{1}{2}$ = _____
13. $\frac{3}{10}$ = _____
14. $\frac{19}{8}$ = _____
15. $\frac{1}{5}$ = _____
16. $\frac{13}{10}$ = _____
17. $\frac{9}{50}$ = _____
18. $\frac{9}{20}$ = _____
19. $\frac{17}{40}$ = _____
20. $\frac{7}{2}$ = _____

FRACTIONS · AGES 11–14

Fraction word problems

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Read each problem carefully and show your working. Give fractions in their simplest form.

Name _____ **Date** _____ **Score** _____ / 8

1. A ribbon is $2\frac{1}{4}$ m long. Finn cuts off $\frac{7}{8}$ m. How much ribbon is left? _____

2. A water tank holds 80 litres when it is full. It is $\frac{7}{8}$ full. How many litres of water are in it? _____

3. Sam has read $\frac{2}{5}$ of a book. That's 26 pages. How many pages are in the whole book? _____

4. Leo runs $3\frac{1}{2}$ km and Finn runs $2\frac{5}{6}$ km. How much further does Leo run? _____

5. $\frac{7}{8}$ of the 32 children at a swimming club can swim a length. How many children can't swim a length yet? _____

6. A recipe needs $\frac{3}{4}$ of a cup of milk for one batch of pancakes. How much milk is needed for 7 batches? _____

7. A train journey takes $2\frac{2}{3}$ hours. The bus ride after it takes $\frac{1}{3}$ of an hour. How long is the whole journey? _____

8. A jug holds $\frac{1}{5}$ of a litre of juice. It is shared equally between 4 glasses. How much juice goes in each glass? _____

The four operations

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Answers are shown in red.

Name _____ Date _____

1. $1\frac{3}{5} \times \frac{3}{4} = \mathbf{1\frac{1}{5}}$

2. $2\frac{1}{2} \div 2\frac{1}{2} = \mathbf{1}$

3. $\frac{9}{5} \times \frac{4}{9} = \mathbf{\frac{4}{5}}$

4. $1\frac{5}{6} - 1\frac{1}{5} = \mathbf{\frac{19}{30}}$

5. $3\frac{1}{2} \div 1\frac{1}{6} = \mathbf{3}$

6. $\frac{5}{6} \div 2\frac{2}{5} = \mathbf{\frac{25}{72}}$

7. $\frac{1}{6} \times 1\frac{4}{5} = \mathbf{\frac{3}{10}}$

8. $\frac{1}{8} - \frac{3}{8} = \mathbf{-\frac{1}{4}}$

9. $-2\frac{5}{6} - \frac{5}{6} = \mathbf{-3\frac{2}{3}}$

10. $3\frac{5}{8} + \frac{1}{12} = \mathbf{3\frac{17}{24}}$

11. $-\frac{13}{6} \times 3\frac{5}{6} = \mathbf{-8\frac{11}{36}}$

12. $-\frac{1}{3} \div \frac{4}{9} = \mathbf{-\frac{3}{4}}$

13. $\frac{3}{4} + \frac{1}{2} = \mathbf{1\frac{1}{4}}$

14. $\frac{5}{3} - \frac{11}{6} = \mathbf{-\frac{1}{6}}$

15. $1\frac{1}{6} + \frac{7}{10} = \mathbf{1\frac{13}{15}}$

16. $\frac{11}{6} + 2\frac{1}{5} = \mathbf{4\frac{1}{30}}$

Change mixed numbers to improper fractions first. To divide, turn the second fraction upside down and multiply.

Fractions of and as fractions

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Answers are shown in red.

Name _____ Date _____

Fractions of amounts Some of these fractions are bigger than 1.

1. $\frac{1}{5}$ of 75 = **15**
2. $\frac{1}{8}$ of 48 = **6**
3. $2\frac{1}{3}$ of 27 = **63**
4. $\frac{7}{12}$ of 168 = **98**
5. $1\frac{3}{4}$ of 24 = **42**
6. $\frac{2}{3}$ of 57 = **38**
7. $\frac{7}{9}$ of 108 = **84**
8. $1\frac{1}{3}$ of 42 = **56**
9. $2\frac{1}{2}$ of 14 = **35**
10. $\frac{3}{5}$ of 85 = **51**

Write the first amount as a fraction of the second Simplest form.

11. 135 minutes as a fraction of an hour — **$\frac{9}{4}$**
12. 21 as a fraction of 9 — **$\frac{7}{3}$**
13. 500 ml as a fraction of a litre — **$\frac{1}{2}$**
14. 30 minutes as a fraction of an hour — **$\frac{1}{2}$**
15. 55 cm as a fraction of a metre — **$\frac{11}{20}$**
16. 8 as a fraction of 20 — **$\frac{2}{5}$**
17. 250 g as a fraction of a kilogram — **$\frac{1}{4}$**
18. 190p as a fraction of £2 — **$\frac{19}{20}$**

> Make the units match first: 1 hour = 60 minutes, 1 m = 100 cm, £1 = 100p, 1 kg = 1,000 g and 1 litre = 1,000 ml.

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Fractions and decimals

Answers are shown in red.

Name _____ Date _____

Decimal to fraction Simplest form. Use an improper fraction if it's bigger than 1.

1. 0.75 = $\frac{3}{4}$
2. 0.1 = $\frac{1}{10}$
3. 1.64 = $\frac{41}{25}$
4. 0.23 = $\frac{23}{100}$
5. 0.7 = $\frac{7}{10}$
6. 0.54 = $\frac{27}{50}$
7. 0.8 = $\frac{4}{5}$
8. 2.5 = $\frac{5}{2}$
9. 0.25 = $\frac{1}{4}$
10. 0.6 = $\frac{3}{5}$

Fraction to decimal Divide the top by the bottom.

11. $\frac{329}{100}$ = 3.29
12. $\frac{1}{2}$ = 0.5
13. $\frac{3}{10}$ = 0.3
14. $\frac{19}{8}$ = 2.375
15. $\frac{1}{5}$ = 0.2
16. $\frac{13}{10}$ = 1.3
17. $\frac{9}{50}$ = 0.18
18. $\frac{9}{20}$ = 0.45
19. $\frac{17}{40}$ = 0.425
20. $\frac{7}{2}$ = 3.5

Fraction word problems

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Answers are shown in red.

Name _____ **Date** _____

1. A ribbon is $2\frac{1}{4}$ m long. Finn cuts off $\frac{7}{8}$ m. How much ribbon is left?

   $1\frac{3}{8}$ m

2. A water tank holds 80 litres when it is full. It is $\frac{7}{8}$ full. How many litres of water are in it?

   70 litres

3. Sam has read $\frac{2}{5}$ of a book. That's 26 pages. How many pages are in the whole book?

   65 pages

4. Leo runs $3\frac{1}{2}$ km and Finn runs $2\frac{5}{6}$ km. How much further does Leo run?

   $\frac{2}{3}$ km

5. $\frac{7}{8}$ of the 32 children at a swimming club can swim a length. How many children can't swim a length yet?

   4 children

6. A recipe needs $\frac{3}{4}$ of a cup of milk for one batch of pancakes. How much milk is needed for 7 batches?

   $5\frac{1}{4}$ cups

7. A train journey takes $2\frac{2}{3}$ hours. The bus ride after it takes $\frac{1}{3}$ of an hour. How long is the whole journey?

   3 hours

8. A jug holds $\frac{1}{5}$ of a litre of juice. It is shared equally between 4 glasses. How much juice goes in each glass?

   $\frac{1}{20}$ litre