

11+ Maths Practice Paper

Year 6 · Advanced

Lesson 3.1: Equivalent fractions and simplifying

Read this with your child:

1. This paper has **27 questions** in two parts. Work through them in order. The questions get harder as you go.
2. **Part 1** is multiple choice. Choose **one** answer, A, B, C, D or E, and mark it on the separate answer sheet by drawing a firm line through the box next to its letter. If you change your mind, rub the line out completely and mark your new answer.
3. **Part 2** asks you to write your answer. Write it in the boxes on the answer sheet, **one digit in each box**, starting from the left.
4. If a question is hard, leave it and come back to it at the end.
5. You may use rough paper for working out. You may **not** use a calculator.
6. Suggested time: **35 minutes**.

The answer sheet is after the questions. The answers, with a short explanation of each, are at the back for a parent to mark with.

These are original practice questions written by Elite Learners in the style of 11+ entrance tests. They are not produced by, or connected with, GL Assessment or Cambridge University Press & Assessment (CEM).

Example

Write this fraction in its simplest form.

$$\frac{36}{48}$$

A $\frac{9}{12}$

B $\frac{2}{3}$

C $\frac{3}{4}$

D $\frac{4}{5}$

E $\frac{35}{47}$

Answer: C The HCF of 36 and 48 is 12. Divide both by 12: $\frac{36}{48} = \frac{3}{4}$.

The answer, C, has already been marked on your answer sheet.

Now turn over and start Part 1.

Part 1: Multiple choice

1

What is the missing number?

$$\frac{6}{9} = \frac{\boxed{?}}{12}$$

A 9

B 8

C 6

D 7

E 10

2

What is the missing number?

$$\frac{2}{3} = \frac{12}{18} = \frac{20}{\boxed{?}}$$

A 25

B 27

C 35

D 36

E 30

3

Write this fraction in its simplest form.

$$\frac{72}{96}$$

A $\frac{3}{4}$

B $\frac{2}{3}$

C $\frac{5}{6}$

D $\frac{18}{24}$

E $\frac{71}{95}$

4

What fraction of an hour is 45 minutes? Give your answer in its simplest form.

A $\frac{9}{20}$

B $\frac{4}{5}$

C $\frac{2}{3}$

D $\frac{3}{4}$

E $\frac{15}{20}$

5

What fraction of £1 is 35p? Give your answer in its simplest form.

A $\frac{35}{100}$

B $\frac{7}{10}$

C $\frac{7}{20}$

D $\frac{1}{3}$

E $\frac{3}{5}$

6

A fraction is equal to $\frac{2}{3}$. Its numerator and denominator add up to 42.

What is the fraction?

A $\frac{10}{32}$

B $\frac{14}{28}$

C $\frac{16}{26}$

D $\frac{6}{15}$

E $\frac{12}{30}$

7

Four of these fractions are equal. Which one is not?

A $\frac{15}{21}$

B $\frac{12}{18}$

C $\frac{14}{21}$

D $\frac{18}{27}$

E $\frac{16}{24}$

8

A school has 450 pupils. 270 of them walk to school.

What fraction of the pupils do not walk to school, in its simplest form?

A $\frac{3}{5}$

B $\frac{2}{5}$

C $\frac{18}{45}$

D $\frac{4}{9}$

E $\frac{1}{3}$

9

What is the missing number?

$$\frac{\boxed{?}}{35} = \frac{12}{20}$$

A 27

B 7

C 15

D 21

E 28

10

Which fraction is already in its simplest form?

A $\frac{39}{52}$

B $\frac{34}{51}$

C $\frac{35}{48}$

D $\frac{38}{57}$

E $\frac{26}{65}$

11

Four of these fractions are equal to $\frac{5}{6}$. Which one is not?

A $\frac{30}{45}$

B $\frac{15}{24}$

C $\frac{20}{32}$

D $\frac{35}{56}$

E $\frac{45}{72}$

12

A bag holds 24 red counters and 16 blue counters.

What fraction of the counters are blue, in its simplest form?

A $\frac{2}{3}$

B $\frac{3}{5}$

C $\frac{4}{10}$

D $\frac{1}{3}$

E $\frac{2}{5}$

13

What is the missing number?

$$\frac{8}{12} = \frac{\boxed{?}}{27}$$

A 23

B 9

C 18

D 16

E 24

14

Which fraction is equal to $\frac{18}{30}$?

A $\frac{6}{15}$

B $\frac{12}{20}$

C $\frac{9}{16}$

D $\frac{3}{6}$

E $\frac{17}{29}$

15

A fraction is equal to $\frac{5}{7}$. Its denominator is 10 more than its numerator.

What is the fraction?

A $\frac{15}{25}$

B $\frac{10}{20}$

C $\frac{20}{28}$

D $\frac{25}{35}$

E $\frac{30}{42}$

16

What fraction of a day is 18 hours? Give your answer in its simplest form.

A $\frac{3}{4}$

B $\frac{9}{50}$

C $\frac{3}{10}$

D $\frac{2}{3}$

E $\frac{4}{5}$

17

What is the missing number?

$$\frac{\boxed{?}}{56} = \frac{45}{63}$$

A 38

B 45

C 40

D 35

E 48

18

Ali is simplifying $\frac{60}{84}$. He divides the top and bottom by 2, and then by 2 again, and gets $\frac{15}{21}$.

What should he divide the top and bottom by next?

A 2

B 5

C 7

D 15

E 3

19

How many fractions with a denominator of 12 are less than 1 and already in their simplest form?

A 3

B 4

C 5

D 6

E 11

20

In a survey, 120 children chose their favourite sport. 45 chose football, 35 chose swimming and the rest chose tennis.

What fraction of the children chose tennis, in its simplest form?

A $\frac{3}{8}$ B $\frac{7}{24}$ C $\frac{2}{3}$ D $\frac{1}{3}$ E $\frac{1}{4}$

Part 2: Write your answer

21

What is the missing number?

$$\frac{9}{15} = \frac{\boxed{?}}{40}$$

Write your answer in the boxes on the answer sheet, one digit in each box.

22

What is the missing number?

$$\frac{28}{42} = \frac{\boxed{?}}{3}$$

Write your answer in the boxes on the answer sheet, one digit in each box.

23

What is the missing number?

$$\frac{64}{80} = \frac{4}{\boxed{?}}$$

Write your answer in the boxes on the answer sheet, one digit in each box.

24

What is the missing number?

$$\frac{5}{12} = \frac{\boxed{?}}{84}$$

Write your answer in the boxes on the answer sheet, one digit in each box.

25

A fraction is equal to $\frac{4}{9}$. Its numerator and denominator add up to 91.

What is its denominator?

Write your answer in the boxes on the answer sheet, one digit in each box.

26

Write this fraction in its simplest form.

What is the numerator of your answer?

$$\frac{84}{126}$$

Write your answer in the boxes on the answer sheet, one digit in each box.

27

There are 96 pupils in Year 6. 60 of them have a brother or sister. The fraction of pupils who do not have a brother or sister is written in its simplest form.

What is the numerator of this fraction?

Write your answer in the boxes on the answer sheet, one digit in each box.

Answer sheet

11+ Maths Practice Paper · Year 6 · Lesson 3.1: Equivalent fractions and simplifying

Name

Draw a firm line through the box next to your answer, like the example.

Part 1: Multiple choice

Ex	A ☐	B ☐	C ☒	D ☐	E ☐
1	A ☐	B ☐	C ☐	D ☐	E ☐
2	A ☐	B ☐	C ☐	D ☐	E ☐
3	A ☐	B ☐	C ☐	D ☐	E ☐
4	A ☐	B ☐	C ☐	D ☐	E ☐
5	A ☐	B ☐	C ☐	D ☐	E ☐
6	A ☐	B ☐	C ☐	D ☐	E ☐
7	A ☐	B ☐	C ☐	D ☐	E ☐
8	A ☐	B ☐	C ☐	D ☐	E ☐
9	A ☐	B ☐	C ☐	D ☐	E ☐
10	A ☐	B ☐	C ☐	D ☐	E ☐
11	A ☐	B ☐	C ☐	D ☐	E ☐
12	A ☐	B ☐	C ☐	D ☐	E ☐
13	A ☐	B ☐	C ☐	D ☐	E ☐
14	A ☐	B ☐	C ☐	D ☐	E ☐
15	A ☐	B ☐	C ☐	D ☐	E ☐
16	A ☐	B ☐	C ☐	D ☐	E ☐
17	A ☐	B ☐	C ☐	D ☐	E ☐
18	A ☐	B ☐	C ☐	D ☐	E ☐
19	A ☐	B ☐	C ☐	D ☐	E ☐
20	A ☐	B ☐	C ☐	D ☐	E ☐

Part 2: Write your answer, one digit in each box

21	
22	
23	
24	
25	
26	
27	

Answers

For a parent to mark with. One mark for each question: the paper is out of 27. Talk through any your child got wrong, using the explanation.

Q	Answer	How to get it
1	B 8	No whole number takes 9 to 12, so simplify first: $\frac{9}{9} = \frac{2}{3}$. Then $3 \times 4 = 12$, so $2 \times 4 = 8$.
2	E 30	Every fraction in the chain equals $\frac{2}{3}$. $2 \times 10 = 20$, so $3 \times 10 = 30$.
3	A $\frac{3}{4}$	The HCF of 72 and 96 is 24. Divide both by 24: $\frac{72}{96} = \frac{3}{4}$.
4	D $\frac{3}{4}$	There are 60 minutes in an hour, so it is $\frac{45}{60}$. The HCF is 15: $\frac{45}{60} = \frac{3}{4}$.
5	C $\frac{7}{20}$	There are 100p in £1, so it is $\frac{35}{100}$. Divide both by 5: $\frac{7}{20}$.
6	E $\frac{12}{30}$	$2 + 5 = 7$, and $42 \div 7 = 6$. Multiply the top and bottom of $\frac{2}{5}$ by 6: $\frac{12}{30}$. Check: $12 + 30 = 42$.
7	A $\frac{15}{21}$	$\frac{12}{18}$, $\frac{14}{21}$, $\frac{18}{27}$ and $\frac{16}{24}$ all simplify to $\frac{2}{3}$. $\frac{15}{21}$ simplifies to $\frac{5}{7}$.
8	B $\frac{2}{5}$	$450 - 270 = 180$ do not walk. $\frac{180}{450}$: the HCF is 90, so it is $\frac{2}{5}$. ($\frac{3}{5}$ is the fraction who do walk.)
9	D 21	20 does not go into 35, so simplify first: $\frac{12}{20} = \frac{3}{5}$. Then $5 \times 7 = 35$, so $3 \times 7 = 21$.
10	C $\frac{35}{48}$	The factors of 35 are 1, 5, 7 and 35, and 48 is not in the 5, 7 or 35 times table, so only 1 goes into both. The others can be divided by 13, 17, 19 and 13.
11	A $\frac{30}{45}$	The others are $\frac{5}{8}$ multiplied by 3, 4, 7 and 9. $\frac{30}{45}$ simplifies to $\frac{2}{3}$.
12	E $\frac{2}{5}$	The whole is $24 + 16 = 40$ counters. $\frac{16}{40} = \frac{2}{5}$. ($\frac{2}{3}$ compares blue with red, not with the whole bag.)
13	C 18	Simplify first: $\frac{8}{12} = \frac{2}{3}$. Then $3 \times 9 = 27$, so $2 \times 9 = 18$.
14	B $\frac{12}{20}$	$\frac{18}{30} = \frac{3}{5}$ (divide by 6). $\frac{12}{20} = \frac{3}{5}$ too (divide by 4), so they are equal.
15	D $\frac{25}{35}$	In $\frac{5}{7}$ the bottom is 2 more than the top. $10 \div 2 = 5$, so multiply by 5: $\frac{25}{35}$. Check: $35 - 25 = 10$.
16	A $\frac{3}{4}$	There are 24 hours in a day, so it is $\frac{18}{24}$. Divide both by 6: $\frac{3}{4}$.
17	C 40	Simplify first: $\frac{45}{63} = \frac{5}{7}$ (divide by 9). Then $7 \times 8 = 56$, so $5 \times 8 = 40$.
18	E 3	15 and 21 are both in the 3 times table: $\frac{15}{21} = \frac{5}{7}$. 5 does not go into 21, and 7 does not go into 15.
19	B 4	Check $\frac{1}{12}$ to $\frac{11}{12}$. Only the tops 1, 5, 7 and 11 share no factor with 12 except 1. That is 4 fractions.
20	D $\frac{1}{3}$	$120 - 45 - 35 = 40$ chose tennis. $\frac{40}{120} = \frac{1}{3}$.
21	24	Simplify first: $\frac{9}{15} = \frac{3}{5}$. Then $5 \times 8 = 40$, so $3 \times 8 = 24$.
22	2	$42 \div 14 = 3$, so $28 \div 14 = 2$. The fraction is $\frac{2}{3}$.
23	5	$64 \div 16 = 4$, so $80 \div 16 = 5$.
24	35	$12 \times 7 = 84$, so $5 \times 7 = 35$.

Q	Answer	How to get it
25	63	$4 + 9 = 13$, and $91 \div 13 = 7$. So the fraction is $\frac{28}{63}$, and the denominator is 63.
26	2	The HCF of 84 and 126 is 42. $\frac{84}{126} = \frac{2}{3}$, so the numerator is 2.
27	3	$96 - 60 = 36$ do not. $\frac{36}{96}$: the HCF is 12, so it is $\frac{3}{8}$. The numerator is 3.

Score: out of 27