

Name _____

Date _____

7.4 Dividing fractions — worksheet

Divide fractions by whole numbers and by fractions, using the reciprocal. · 46 questions · Show your working.

Remember

- The **reciprocal** of a fraction is that fraction upside down. The reciprocal of $\frac{3}{5}$ is $\frac{5}{3}$.
- A number times its reciprocal is **1**.
- To divide by a fraction, **multiply by its reciprocal**: keep, flip, multiply.
- Dividing by a fraction **less than 1 makes the answer bigger** — you are asking how many small pieces fit in.
- Dividing by a whole number n is the same as multiplying by $\frac{1}{n}$.
- A whole number is a fraction over 1, so the reciprocal of 4 is $\frac{1}{4}$.
- For mixed numbers, convert to improper fractions before dividing.
- Check by size: $6 \div \frac{1}{2}$ must be more than 6, because halves are small.

A · Fluency — Divide by whole numbers and fractions.

1 Work out $1^{\frac{1}{2}} \div 2$

2 Work out $3^{\frac{1}{4}} \div 3$

3 Work out $2^{\frac{1}{3}} \div 4$

4 Work out $5^{\frac{1}{6}} \div 5$

5 Work out $4^{\frac{1}{5}} \div 2$

6 Work out $7^{\frac{1}{8}} \div 7$

7 Work out $6^{\frac{1}{7}} \div 3$

8 Work out $9^{\frac{1}{10}} \div 3$

9 Work out $6 \div 1^{\frac{1}{2}}$

10 Work out $4 \div 1^{\frac{1}{3}}$

11 Work out $10 \div 1^{\frac{1}{5}}$

12 Work out $3 \div 1^{\frac{1}{4}}$

- 13 Work out $8 \div 2^3$
-
- 14 Work out $5 \div 3^4$
-
- 15 Work out $12 \div 3^5$
-
- 16 Work out $9 \div 2^7$
-
- 17 Work out $1^2 \div 1^4$
-
- 18 Work out $3^4 \div 1^2$
-
- 19 Work out $2^3 \div 1^6$
-
- 20 Work out $5^6 \div 2^3$
-
- 21 Work out $4^5 \div 2^5$
-
- 22 Work out $3^8 \div 3^4$
-
- 23 Work out $7^9 \div 7^3$
-
- 24 Work out $5^{12} \div 5^6$
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B · Reasoning — Reciprocals and why answers grow.

- 25 What is the reciprocal of $3/5$?
- ☐ $3/5$
 - ☐ $5/3$
 - ☐ $-3/5$
 - ☐ $1/5$
- 26 Dividing by a fraction is the same as ...
- ☐ multiplying by it
 - ☐ multiplying by its reciprocal
 - ☐ subtracting it
 - ☐ adding its reciprocal
- 27 Why is $6 \div 1/2 = 12$ and not 3?
- ☐ Because $6 \times 2 = 12$
 - ☐ Because there are twelve halves in six
 - ☐ Both of the above
 - ☐ It is 3

28 Dividing by a fraction less than 1 makes a number ...

- ☐ smaller
- ☐ bigger
- ☐ unchanged
- ☐ negative

29 Is $1/2 \div 2$ the same as $1/2 \times 1/2$?

- ☐ Yes
- ☐ No

30 Is $1/2 \div 2$ the same as $1/2 \times 2$?

- ☐ Yes
- ☐ No

31 What is the reciprocal of 4?

- ☐ 4
- ☐ $1/4$
- ☐ -4
- ☐ 0.4

32 Zara writes $3/4 \div 1/2 = 3/8$. What has she done wrong?

- ☐ Nothing
- ☐ She multiplied instead of flipping first
- ☐ She used the wrong reciprocal of $3/4$
- ☐ She forgot to simplify

C · Challenge — Working backwards, and how many fit.

33 Work out $3^3 \div 3^8$

34 How many quarter-litre cups can be filled from 3 litres?

35 How many pieces of ribbon $2/5$ m long can be cut from 4 m?

36 Work out $5^5 \div 5^6$

37 A piece of wood 2^1 m long is cut into 3 equal pieces. How long is each, in metres?

38 A number divided by $1/3$ gives 15. What is the number?

D · Word problems — Sharing and cutting up.

39 How many half-litre bottles can be filled from 8 litres?

- 40** How many third-of-a-metre pieces come from 6 m of string?

- 41** $\frac{3}{4}$ litre of juice is shared equally between 6 people. How much does each get, in litres?

- 42** A ribbon $\frac{5}{6}$ m long is cut into 5 equal pieces. How long is each, in metres?

- 43** How many $\frac{3}{4}$ -cup servings are in 6 cups?

- 44** A 12 m rope is cut into $\frac{2}{3}$ m lengths. How many pieces?

- 45** $\frac{2}{3}$ kg of rice fills 4 equal bags. How much is in each bag, in kg?

- 46** How many quarter-hour slots fit into 3 hours?
