



Pre-Algebra 1

TESTS MASTERY OF MATH FOUNDATIONS 4 • 20 ITEMS • 55-70 MINUTES • NO CALCULATOR

This diagnostic checks whether multiplication, division, fraction and decimal understanding is strong enough to begin the arithmetic-to-algebra bridge. The items deliberately separate students who can execute procedures from those who understand why the procedures work.

BEFORE YOU BEGIN

No calculator. Show your working - a correct answer with no method still leaves us guessing.

Leave unfamiliar questions blank rather than guessing.

An adult may read questions aloud but should not explain any mathematics.

Take a break if needed. This is a picture of understanding, not a race.

SECTION A Multiple choice

10 items

Choose one answer. If you are unsure, leave it blank rather than guessing.

01 Which is closest in value to 1?

- A) $\frac{9}{10}$
- B) $\frac{10}{9}$
- C) $\frac{1}{9}$
- D) $\frac{9}{1}$

02 $0.4 \times 10 =$

- A) 4
- B) 0.40
- C) 40
- D) 0.04

03 What is $\frac{3}{5}$ as a decimal?

- A) 0.6
- B) 0.35
- C) 3.5
- D) 0.53



04 The ratio of red to blue counters is 2:3. There are 12 red. How many blue?

- A) 18
- B) 13
- C) 8
- D) 24

05 Which expression means 'five less than a number n'?

- A) $n - 5$
- B) $5 - n$
- C) $5n$
- D) $n / 5$

06 What is 25% of 80?

- A) 20
- B) 25
- C) 320
- D) 55

07 Which of these is NOT equal to $\frac{3}{4}$?

- A) 0.34
- B) 0.75
- C) 75%
- D) $\frac{6}{8}$

08 $-3 + 5 =$

- A) 2
- B) -8
- C) 8
- D) -2

09 A jacket costs \$40 and is reduced by 20%. What is the new price?

- A) \$32
- B) \$20
- C) \$38
- D) \$8



10 Which is the best estimate for 19.8×4.1 ?

- A) 80
- B) 8
- C) 800
- D) 24

SECTION B Student solving

6 items

Show your working. We are reading the method, not only the answer.

11 Work out $\frac{2}{3} \times \frac{3}{4}$. Show your method and give the answer in simplest form.

12 A recipe for 4 people uses 300g of rice. How much is needed for 10 people? Show your working.

13 Work out $7.2 \div 0.8$. Show your method.



- 14 Simplify: $3(x + 4)$. Then explain what the 3 is doing.

- 15 The mean of five numbers is 12. Four of them are 8, 10, 14 and 16. Find the fifth.

- 16 Write 0.375 as a fraction in its simplest form. Show each step.

SECTION C Error analysis

4 items

Each shows work containing a mistake. Find the FIRST incorrect step, say what the student believed, and give the correct answer.

- 17 Find the first incorrect step, explain the belief behind it, and give the correct answer.

$$\begin{aligned} & 3(x + 4) \\ & = 3x + 4 \end{aligned}$$

- 18 Find the error and give the correct answer.

$$\begin{aligned} & 0.5 \times 0.4 \\ & = 2.0 \end{aligned}$$



- 19 A student compared two fractions like this. Find the flaw and compare them correctly.

Which is larger, $\frac{2}{3}$ or $\frac{3}{5}$?

Student: $3 > 2$ and $5 > 3$, so $\frac{3}{5}$ is larger.

- 20 Find the first incorrect step and correct it.

A price rises from 40 to 50.

Student: the increase is 10,
so the percentage increase is 10%.

What happens next

Bring this completed sheet to your consultation. A tutor reads it alongside a short conversation with the student and any school work you choose to share, then recommends a level. No placement is ever decided by a score on its own, and no student is placed without a tutor's approval.