ALGEBRAIC FRACTIONS: SIMPLIFYING

GRADE 8

Examination Practice Questions

You should have:

A ruler, protractor, compasses, a pen, pencil, eraser, calculator.
For some questions, you may need tracing paper.

Instructions

- Use **black** ink or ball-point pen.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**

Information

- The marks for each question are shown in brackets.
- Use the number of marks for each question as a guide as to how much time to spend on each question. As a rough guide, you can multiply the number of marks by 1.2 to see how many minutes you should spend on a question.
- Questions been carefully compiled from or modelled on a variety of past papers and will generally get more challenging as the document progresses. Some of the later questions will go beyond the core grade level for this topic.

Advice

- Read each question carefully before you start to answer it.
- Don’t forget to have fun.
- Check your answers at the end.

Q1. AtoZrevision.com

Simplify $\frac{2x+4}{2}$

.....

(2 marks)

Q2. AtoZrevision.com

Simplify $\frac{x+1}{x^3+x^2}$

.....

(2 marks)

Q3. AtoZrevision.com

Simplify $\frac{x^2+x}{x+1}$

.....

(2 marks)

Q4. AtoZrevision.com

Simplify $\frac{5x-15}{x-3}$

.....

(2 marks)

Q5. AtoZrevision.com

Simplify $\frac{x+3}{4x+12}$

.....

(2 marks)

Q6. AtoZrevision.com

Simplify fully $\frac{8(x-4)}{(x-4)^2}$

.....

(1 mark)

Q7. AtoZrevision.com

Simplify fully $\frac{4(y+3)^3}{(y+3)^2}$

.....

(1 mark)

Q8. AtoZrevision.com

Simplify fully $\frac{(x+10)^5}{(x+10)^4}$

.....

(1 mark)

Q9. AtoZrevision.com

Simplify fully $\frac{8(x-3)^2}{4(x-3)(x+3)}$

.....

(2 marks)

Q10. AtoZrevision.com

Simplify fully $\frac{(7x-1)(7x-1)}{(7x-1)(x-5)}$

.....

(1 mark)

Q11. AtoZrevision.com

Simplify fully $\frac{x^2-4x}{x^2+x-20}$

.....

(3 marks)

Q12. AtoZrevision.com

Simplify fully $\frac{1-x}{x^2-3x+2}$

.....

(3 marks)

Q13. AtoZrevision.com

Simplify fully $\frac{x^2 + 4x - 5}{x^2 + 5x}$

.....

(3 marks)

Q14. AtoZrevision.com

Simplify fully $\frac{2x^2+9x-5}{x^2+2x-15}$

.....

(3 marks)

Q15. AtoZrevision.com

Simplify fully $\frac{3x^2-2x-8}{3x^2-12}$

.....

(3 marks)

Q16. AtoZrevision.com

Simplify fully $\frac{2x^2-3x-14}{2x^2-8}$

.....

(2 marks)

Q17. AtoZrevision.com

Simplify fully $\frac{2x^2-13x+20}{2x-8}$

.....

(3 marks)

Q18. AtoZrevision.com

Simplify fully $\frac{3x^2-x-2}{x^2-1}$

.....

(3 marks)

Q19. AtoZrevision.com

Simplify fully $\frac{3x^2-x-10}{x^2-4}$

.....

(3 marks)

Q20. AtoZrevision.com

Simplify fully $\frac{4x^2-25}{2x^2-x-10}$

.....

(3 marks)

Q21. AtoZrevision.com

Simplify fully $\frac{4x^2-25}{8x^2-22x+5}$

.....

(3 marks)

Q22. AtoZrevision.com

Simplify fully $\frac{10x^2+23x+12}{4x^2-9}$

.....

(3 marks)

Q23. AtoZrevision.com

Simplify fully $\frac{3x^2-6xy}{4x^2-8xy-3xy+6y^2}$

.....

(3 marks)

Q24. AtoZrevision.com

Simplify fully $\frac{2^n-1}{4^n-1}$

.....

(3 marks)

Q25. AtoZrevision.com

Prove that, for all positive values of n

$$\frac{(n+2)^2-(n+1)^2}{2n^2+3n}$$

is equal to $\frac{a}{b}$

Where a and b are integers or variables to be found.

.....

(3 marks)

Q26. AtoZrevision.com

Find an expression for the gradient of the line joining point A$(6,9)$ to point B$(4p, 4p^2)$.

Give your answer in its simplest form.

.....

(3 marks)

QUESTIONS FROM MATHEMATICAL COMPETITIONS

Q1. AtoZrevision.com

Which of the expressions below is equivalent to:

$$(x \div (y \div z)) \div ((x \div y) \div z)$$

Tick the correct answer.

1

$\frac{1}{xyz}$

x^2

y^2

z^2

Q2. AtoZrevision.com

When the expression $\frac{(2^2-1)\times(3^2-1)\times(4^2-1)\times(5^2-1)}{(2\times3)\times(3\times4)\times(4\times5)\times(5\times6)}$ is simplified, which of the following is obtained?

Tick the correct answer.

A $\frac{1}{2}$

B $\frac{1}{3}$

C $\frac{1}{4}$

D $\frac{1}{5}$

E $\frac{1}{6}$

Q3. AtoZrevision.com

What is the positive difference between the numerator and the denominator when the expression shown is written as a single fraction in its simplest form?

$$\frac{n}{n+1-\frac{n+2}{n+3}}$$

Tick the correct answer.

$2n+2$ $1n+2$ $2n$ 2 1