



FluidMaths

GCSE Mathematics (Grade 9-1)

Problem Solving
Algebraic Fractions
Questions

The marks shown are for guidance purposes only

When not specified, round all non-terminating decimals during your calculations to 3 significant figures

Some useful strategies in problem-solving

- Read the question carefully
- Sketch a diagram where applicable
- Take note of key information
- Write down any formulae you may need
- Tackle the problem in bite-size rather than as a whole
- Concentrate on the part of the problem you understand and start from there
- Collaborate with a partner and share ideas
- Use a dictionary to find the meaning of any confusing words
- Check that your answers make sense in the context of the question

Algebraic Fractions (Four Operations) Questions

1	<p>Given that $x\frac{1}{2} + 3x\frac{1}{3} = 20\frac{5}{6}$</p> <p>What is the value of the whole number x?</p>	[4marks]
2	<p>Simplify $4\frac{2x}{3} + 5\frac{x}{4}$ as far as possible</p>	[3marks]
3	<p>Given that $\frac{1}{2} + \frac{x}{y} = 1\frac{2}{3}$</p> <p>What is the value of the expression $x + y$?</p>	[3marks]
4	<p>Given that $\frac{a}{4} + \frac{b}{7} = \frac{25}{28}$</p> <p>where a and b are different whole numbers</p> <p>What is the value of the expression $a + b$?</p>	[5marks]
5	<p>Given that $\frac{x}{6} + \frac{y}{5} = \frac{33}{30}$</p> <p>Where x and y are positive whole numbers</p> <p>What is the value of the expression $\frac{x}{6} - \frac{y}{5}$?</p>	[4marks]
6	<p>Given that $\frac{x}{2} + \frac{x}{2} = 5$ and $\frac{x}{3} - \frac{y}{3} = 4$</p> <p>Workout the value of y</p>	[3marks]
7	<p>Given that $\frac{x}{5} + \frac{6}{7} = \frac{86}{35}$</p> <p>What is the value of x?</p>	[3marks]
8	<p>Given that $\frac{x}{8} \times \frac{5}{x} = \frac{px}{3} \div \frac{4}{5}$</p> <p>Find the value of p when $x = 4$?</p>	[3marks]
9	<p>Simplify fully $\frac{x^2+x-6}{x^2-3x+2} \times \frac{x^2-x}{x^2-9}$</p>	[3marks]
10	<p>Given that $\frac{(x+4)^2}{3x} \div \frac{2x+8}{15x} = ax + 10$,</p> <p>What is the value of a as a decimal?</p>	[4marks]

11	<p>Given that $\frac{x-10}{x+2} \div \frac{1}{(x^2-4)} = (x+a)^2 + b$</p> <p>What is the value of the expression $a - b$? [4marks]</p>
12	<p>Given that $\frac{x^2+9x+14}{x^2+10x+21} \div \frac{x^2+10x+16}{x^2+2x-3} = \frac{x+a}{x+b}$</p> <p>What is the value of the expression $(a + b)^2$ [5marks]</p>
13	<p>Given that $\frac{2x^2+5x+2}{x^2-4} \div \frac{2x^2+x}{x^2+x-6} = \frac{(x+k)}{x}$</p> <p>What is the value of k? [5marks]</p>
14	<p>Given that $\frac{2x^2-7x-15}{x^2-25} \times \frac{x^2-2x-35}{x^2-49} = \frac{ax+b}{cx+d}$</p> <p>What is the value of the expression $(ab + cd)$? [5marks]</p>
15	<p>Show that $\frac{(x-3)(5x^2+32x-21)}{25x^2-9} \div \frac{x+7}{10x^2+11x+3}$</p> <p>can be written in the form $ax^2 + bx + c$</p> <p>where a, b and c are integers</p> <p style="text-align: right;">[5marks]</p>