

REGULAR QUIZ 03

Form 2 Regular Course
Algebraic Fraction
Formula

Part A - MC (@3 marks)

1.	C	$\frac{12ab-16bc}{9a^2-12ac} = \frac{4b(3a-4c)}{3a(3a-4c)} = \frac{4b}{3a}$
2.	D	$\frac{6x}{4x^2-4y^2} \times \frac{6(x+y)}{-4x^2} = \frac{6x}{4(x+y)(x-y)} \times \frac{6(x+y)}{-4x^2} = -\frac{9}{4x(x-y)}$
3.	A	$1 - \frac{y}{y+1} = \frac{y+1}{y+1} - \frac{y}{y+1} = \frac{1}{y+1}$
4.	C	$\frac{1}{2(x-1)} - \frac{1}{4x} = \frac{2x}{4x(x-1)} - \frac{x-1}{4x(x-1)} = \frac{x+1}{4x(x-1)}$
5.	D	$\begin{aligned} -4 &= \frac{2(r-2)}{3-r} \\ -12+4r &= 2r-4 \\ r &= 4 \end{aligned}$
6.	B	$\begin{aligned} B &= \frac{x-3}{2x+1} \\ 2Bx+B &= x-3 \\ B+3 &= x-2Bx \\ x &= \frac{B+3}{1-2B} \end{aligned}$

1. C 2. D 3. A 4. C 5. D
6. B

Part B - Short Questions (43 marks)

1. (3 marks)

$$\begin{aligned} & \frac{x^2 - y^2}{y - x} \\ &= \frac{(x + y)(x - y)}{y - x} \quad 1\text{M} \\ &= -(x + y) \quad 1\text{M} \\ &= -x - y \quad 1\text{A} \end{aligned}$$

2. (3 marks)

$$\begin{aligned} & \frac{k}{x^2 + xy} - \frac{k}{x^2 + 2xy + y^2} \\ &= \frac{k}{x(x + y)} - \frac{k}{(x + y)^2} \quad 1\text{M} \\ &= \frac{k(x + y)}{x(x + y)^2} - \frac{kx}{x(x + y)^2} \quad 1\text{M} \\ &= \frac{ky}{x(x + y)^2} \quad 1\text{A} \end{aligned}$$

3. (5 marks)

$$\begin{aligned} & \frac{1}{(x + 3)(x + 2)} - \frac{2}{(x + 4)(x + 2)} \\ &= \frac{x + 4}{(x + 3)(x + 2)(x + 4)} - \frac{2(x + 3)}{(x + 4)(x + 2)(x + 3)} \quad 1\text{M} \\ &= \frac{-x - 2}{(x + 3)(x + 2)(x + 4)} \quad 1\text{M} \\ &= -\frac{1}{(x + 3)(x + 4)} \quad 3\text{A} \end{aligned}$$

4. (3 marks)

$$2 = \frac{m+3}{3m} \quad 1M$$

$$6m = m+3 \quad 1M$$

$$m = \frac{3}{5} \quad 1A$$

5. (4 marks)

$$(a) \quad m = \frac{a-n}{a+n}$$

$$am + mn = a - n$$

$$mn + n = a - am \quad 1M$$

$$a = \frac{mn+n}{1-m} \quad 1A$$

$$(b) \quad \frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

$$\frac{1}{u} = \frac{1}{f} - \frac{1}{v}$$

$$\frac{1}{u} = \frac{v-f}{fv} \quad 1M$$

$$u = \frac{fv}{v-f} \quad 1A$$

6. (3 marks)

$$x^2 - y^2 - 4x + 4y$$

$$= (x+y)(x-y) - 4(x-y) \quad 1M+1A$$

$$= (x-y)(x+y-4) \quad 1A$$

7. (5 marks)

$$(a) \quad (a-b)^2 + 22(a-b) + 121$$

$$= (a-b)^2 + 2(a-b)(11) + 11^2 \quad 1M$$

$$= (a-b+11)^2 \quad 1A$$

$$(b) \quad 64 - (2-4x)^2$$

$$= 8^2 - (2-4x)^2 \quad 1M$$

$$= (8+2-4x)(8-2+4x)$$

$$= (10-4x)(6+4x) \quad 1A$$

$$= 4(5-2x)(3+2x) \quad 1A$$

8. (6 marks)

(a) $(x^2 - 4x + 4) - (y - 2)^2$
 $= (x - 2)^2 - (y - 2)^2$ 1M
 $= (x - 2 + y - 2)(x - 2 - y + 2)$ 1M
 $= (x + y - 4)(x - y)$ 1A

(b) $9x^2 - 9 + 6y - y^2$
 $= (3x)^2 - (y^2 - 6y + 9)$ 1M
 $= (3x)^2 - (y - 3)^2$ 1M
 $= (3x + y - 3)(3x - y + 3)$ 1A

9. (6 marks)

(a) Put $n = 5$
 $2 + 4 + 6 + \dots + 10$
 $= 5(5 + 1)$ 1M
 $= 30$ 1A

(b) Put $n = 20$
 $2 + 4 + 6 + \dots + 40$
 $= 20(20 + 1)$ 1M
 $= 420$ 1A

(c) $12 + 14 + 16 + \dots + 40$
 $= (2 + 4 + 6 + \dots + 40) - (2 + 4 + 6 + \dots + 10)$ 1M
 $= 390$ 1A

10. (5 marks)

(a) $T = 18.3p + 9.2(q + r)$ 1A

(b) T
 $= 18.3(3) + 9.2(2)$
 $= 73.3 > 70$ 1A
 \therefore No. 1A f.t.

(c) $119.1 = 18.3p + 9.2(3)$ 1M
 $p = 5$
 \therefore 5 adults 1A