Q ① Calculate the EXACT value of.

(a) $4\frac{1}{5} - \left(1\frac{1}{9} \times 3\right)$

$\Rightarrow \frac{21}{5} - \left(\frac{10}{9_3} \times \frac{\cancel{3}}{1}\right)$

$\Rightarrow \frac{21}{5} - \left(\frac{10}{3}\right)$

$\Rightarrow \frac{21}{5} - \frac{10}{3}$

$\frac{3(21) - 5(10)}{15} = \frac{63 - 50}{15}$

$\left(\text{L.C.M of } 5 \& 3\right)$

$ans = \frac{13}{15}$

• Firstly, simplify the contents of the brackets.

• change mixed number into improper fraction(s)

(b)

May/June 2005   Question (2)

Q (2)

(a) Factorize completely :

(i) $5a^2b + ab^2$

ans $ab(5a + b)$ ✓

(ii) $9K^2 - 1$

Form of Answer is $(a+b)(a-b)$

let $a = 3k$

let $b = 1$

∴ ans $= (3k+1)(3k-1)$ ✓

This is Type:
Difference of 2 squares
Two square terms
separated by a minus
$(-)$ sign

$9k^2 = 3k \times 3k$

$1 = 1 \times 1$

(iii) $2y^2 - 5y + 2$

$2y^2 - 4y, -1y + 2$

$2y(y-2) -1(y-2)$

ans: $(y-2)(2y-1)$

TYPE: Quadratic
because of the
square on (y)

$ax^2 + bx + c$

$2 + 2 = 4$

Factors of $4 = 1, 2, 4$

(iv) Expand and Simplify

$(2x+5)(3x-4)$

$(2x+5)(3x-4)$ ✗

$6x^2 - 8x + 15x - 20$

Using the F.O.I.L
method: multiply
First - F
Outer - O
Inner - I
Last - L

← Simplify

© Adam scored (x)

Imran scored 3 less than adam.

∴ imran scored $(x-3)$

Shakeel scored twice as Imran.

∴ shakeel scored $2(x-3)$

Equation to Find $\underline{\underline{x}}$

$x + (x-3) + 2(x-3) = 39$ Simplify by

$x + x - 3 + 2x - 6 = 39$ → Combining liked

$2x - 3 + 2x - 6 = 39$ terms.

$4x - 3 - 6 = 39$

$4x - 9 + 9 = 39$ (+9)

$4x = 39 + 9$

$4x = 48$ (÷4)

$x = \dfrac{48}{4}$

$x = 12$

(b) The functions f and g
     are defined by

$$f(x) = \frac{1}{2}x + 5$$
$$g(x) = x^2$$

Evaluate:

(i) $g(3) + g(-3)$

$\Rightarrow g(x) = x^2$ $(x = 3)$

$g(3) = 3^2$

ans $g(3) = 9$

$\Rightarrow g(-3) = (-3)^2$ $(x = -3)$ | $(-3) + (-3) = -3 + -3$

$= +9$ | $= +9$

$\therefore$ ans $= 9 + 9$

$= 18$

(ii) $f^{-1}(6)$ ie: F inverse (6.) | First you'll need to create a new inverse, Function.

$f^{-1}(x) = \frac{1}{2}x + 5$

$y = \frac{1}{2} \times x + 5$

$y = \frac{x}{2} + 5$ | make x the subject of the formula (S.O.T.F)

$y - 5 = \frac{x}{2}$ (-5) both sides

$2(y-5) = \frac{x}{2}$ $(\times 2$ both sides$)$

$2y - 10 = x$ (OR) | x is now the S.O.T.F

$x = 2y - 10$ | Interchange x and y

$y = 2x - 10$