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classmate

Date _____

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ch-4
Exercise 4.7

Q.1

Let the first no. be x

Second no. = $x+1$

ATQ,

$$x^2 + (x+1)^2 = 85$$

$$x^2 + x^2 + 2x + 1 = 85$$

$$2x^2 + 2x + 1 - 85 = 0$$

$$2x^2 + 2x - 84 = 0$$

$$x^2 + x - 42 = 0$$

$$x^2 + 7x - 6x - 42 = 0$$

$$x(x+7) - 6(x+7) = 0$$

$$(x+7)(x-6) = 0$$

$$x+7 = 0$$

$$x = -7$$

$$x-6 = 0$$

$$x = 6$$

CASE I

If the first no. is -7 , then the second no. is -6 .

CASE II

If the first no. is 6 , then the second no. is 7 .

Q.2

Let the first part be x .

Second part = $29 - x$

ATQ,

$$x^2 + (29-x)^2 = 425$$

$$x^2 + 841 + x^2 - 58x = 425$$

$$2x^2 - 58x + 841 - 425 = 0$$

$$2x^2 - 58x + 416 = 0$$

$$x^2 - 29x + 208 = 0$$

$$x^2 - 13x - 16x + 208 = 0$$

$$x(x-13) - 16(x-13) = 0$$

$$(x-13)(x-16) = 0$$

$$x - 13 = 0$$

$$\boxed{x = 13}$$

$$x - 16 = 0$$

$$\boxed{x = 16}$$

CASE I

If the first part is 13, then the second part is 16.

CASE II

If the first part is 16, then the second part is 13.

Let the first no. be x

Second no. = $48 - x$

ATQ,

$$x(48-x) = 432$$

$$48x - x^2 = 432$$

$$x^2 - 48x + 432 = 0$$

$$x^2 - 12x - 36x + 432 = 0$$

$$x(x-12) - 36(x-12) = 0$$

$$(x-12)(x-36) = 0$$

$$x - 12 = 0$$

$$\boxed{x = 12}$$

$$x - 36 = 0$$

$$\boxed{x = 36}$$

CASE I

If the first no. is 12, then the second no. is 36.

CASE II

If the first no. is 36, then the second no. is 12.

Q.5 Let the integer be x

ATQ,

$$x^2 + x = 90$$

$$x^2 + x - 90 = 0$$

$$x^2 + 10x - 9x - 90 = 0$$

$$x(x+10) - 9(x+10) = 0$$

$$(x+10)(x-9) = 0$$

$$x+10 = 0$$

$$\boxed{x = -10}$$

$$x-9 = 0$$

$$\boxed{x = 9}$$

Hence, the integer is either -10 or 9.

Q.7

Let the first no. be x

Second natural no. = $x+1$

ATQ,

$$x(x+1) = 20$$

$$x^2 + x = 20$$

$$x^2 + x - 20 = 0$$

$$x^2 + 5x - 4x - 20 = 0$$

$$x(x+5) - 4(x+5) = 0$$

$$(x+5)(x-4) = 0$$

$$x + 5 = 0$$

$$\boxed{x = -5}$$

(Neglected)

$$x - 4 = 0$$

$$\boxed{x = 4}$$

Hence, the two consecutive natural no. are 4 & 5.

Let the first odd no. be x .

Consecutive odd no. = $x + 2$

ATQ,

$$x^2 + (x + 2)^2 = 394$$

$$x^2 + x^2 + 4x + 4 = 394$$

$$2x^2 + 4x + 4 - 394 = 0$$

$$2x^2 + 4x - 390 = 0$$

$$x^2 + 2x - 195 = 0$$

$$x^2 + 15x - 13x - 195 = 0$$

$$x(x + 15) - 13(x + 15) = 0$$

$$(x + 15)(x - 13) = 0$$

$$x + 15 = 0$$

$$\boxed{x = -15}$$

(Neglected)

$$x - 13 = 0$$

$$\boxed{x = 13}$$

Hence, the two odd consecutive positive integers are 13 and 15.

Let the first no. be x .

Second no. = $8 - x$

ATQ,

$$15 \left(\frac{1}{x} + \frac{1}{8-x} \right) = 8$$

$$\frac{1}{x} + \frac{1}{8-x} = \frac{8}{15}$$

$$\frac{8-x+x}{x(8-x)} = \frac{8}{15}$$

$$\frac{8}{8x-x^2} = \frac{8}{15}$$

$$\cancel{8}(15) = \cancel{8}(8x-x^2)$$

$$8x-x^2-15=0$$

$$x^2-8x+15=0$$

$$x^2-3x-5x+15=0$$

$$x(x-3)-5(x-3)=0$$

$$(x-3)(x-5)=0$$

$$x-3=0$$

$$\boxed{x=3}$$

$$x-5=0$$

$$\boxed{x=5}$$

CASE I

If the first no. is 3, then the second no. is 5.

CASE II

If the first no. is 5, then the second no. is 3.

Q. 16

Let the no. be x .

ATQ,

$$x + \sqrt{x} = \frac{6}{25}$$

$$\sqrt{x} = \frac{6}{25} - x$$

$$(\sqrt{x})^2 = \left(\frac{6}{25} - x\right)^2$$

$$x = \frac{36}{625} + \frac{x^2 - 12x}{25}$$

$$x = \frac{36 + 625x^2 - 300x}{625}$$

$$625x = 36 + 625x^2 - 300x$$

$$625x^2 - 300x - 625x + 36 = 0$$

$$625x^2 - 925x + 36 = 0$$

$$625x^2 - 25x - 900x + 36 = 0$$

$$25x(25x - 1) - 36(25x - 1) = 0$$

$$(25x - 1)(25x - 36) = 0$$

$$25x - 1 = 0$$

$$\boxed{x = \frac{1}{25}}$$

$$25x - 36 = 0$$

$$\boxed{x = \frac{36}{25}}$$

(Neglected)

Hence, the number is $\frac{1}{25}$.

Let the no. be x .

ATQ,

$$x + \frac{x^2}{4} = \frac{63}{4}$$

$$4x + 4x^2 = 63$$

$$4x^2 + 4x - 63 = 0$$

$$4x^2 + 18x - 14x - 63 = 0$$

$$2x(2x + 9) - 7(2x + 9) = 0$$

$$(2x + 9)(2x - 7) = 0$$

$$2x + 9 = 0$$

$$\boxed{x = -\frac{9}{2}}$$

$$2x - 7 = 0$$

$$\boxed{x = \frac{7}{2}}$$

Hence, the no. is either $-\frac{9}{2}$ or $\frac{7}{2}$

Ch-4Exercise 4.7Let the first integer be x .Second integer = $x+1$ Third integer = $x+2$

ATQ,

$$x^2 + (x+1)(x+2) = 154$$

$$x^2 + x^2 + x + 2x + 2 = 154$$

$$2x^2 + 3x + 2 - 154 = 0$$

$$2x^2 + 3x - 152 = 0$$

$$2x^2 - 16x + 19x - 152 = 0$$

$$2x(x-8) + 19(x-8) = 0$$

$$(x-8)(2x+19) = 0$$

$$x - 8 = 0$$

$$\boxed{x = 8}$$

$$2x + 19 = 0$$

$$\boxed{x = -19}$$

$$\boxed{2}$$

(Neglected)

$$\therefore \text{First integer} = x = \boxed{8}$$

$$\text{Second integer} = x+1 = \boxed{9}$$

$$\text{Third integer} = x+2 = \boxed{10}$$

Let the first multiple of 5 be x .Second multiple = $x+5$

ATQ,

$$x(x+5) = 300$$

$$x^2 + 5x = 300$$

$$x^2 + 5x - 300 = 0$$

$$x^2 + 20x - 15x - 300 = 0$$

$$x(x+20) - 15(x+20) = 0$$

$$(x+20)(x-15) = 0$$

$$x+20 = 0$$

$$x = -20$$

$$x-15 = 0$$

$$x = 15$$

∴ The required multiples are either -20, -15 or 15, 20.

Q.14

Let the first no. be x

Second no. = $2x-3$

ATQ,

$$x^2 + (2x-3)^2 = 233$$

$$x^2 + 4x^2 + 9 - 12x = 233$$

$$5x^2 - 12x + 9 - 233 = 0$$

$$5x^2 - 12x - 224 = 0$$

$$5x^2 - 40x + 28x - 224 = 0$$

$$5x(x-8) + 28(x-8) = 0$$

$$(x-8)(5x+28) = 0$$

$$x-8 = 0$$

$$x = 8$$

$$5x+28 = 0$$

$$x = -\frac{28}{5}$$

(Neglected)

∴ The two no. are 8 and 13.

Let the first no. be x

Second no. = $x - 4$

ATQ,

$$\frac{1}{x-4} - \frac{1}{x} = \frac{4}{21}$$

$$\frac{x - x + 4}{(x-4)x} = \frac{4}{21}$$

$$\frac{4}{x^2 - 4x} = \frac{4}{21}$$

$$x(21) = x(x^2 - 4x)$$

$$x^2 - 4x - 21 = 0$$

$$x^2 - 7x + 3x - 21 = 0$$

$$x(x-7) + 3(x-7) = 0$$

$$(x-7)(x+3) = 0$$

$$x-7 = 0$$

$$\boxed{x = 7}$$

$$x+3 = 0$$

$$\boxed{x = -3}$$

Hence, the two no. are $-7, 3$ or $-3, -7$.

Let the first no. be x

Second no. = $x - 3$

ATQ,

$$x^2 + (x-3)^2 = 117$$

$$x^2 + x^2 + 9 - 6x = 117$$

$$2x^2 - 6x + 9 - 117 = 0$$

$$2x^2 - 6x - 108 = 0$$

$$x^2 - 3x - 54 = 0$$

$$x^2 - 9x + 6x - 54 = 0$$

$$x(x-9) + 6(x-9) = 0$$

$$(x-9)(x+6) = 0$$

$$x-9=0$$

$$\boxed{x=9}$$

$$x+6=0$$

$$\boxed{x=-6}$$

(Neglected)

Hence, the two no. are 9 and 6

Q. 18

Let the first no. be x

Second no. = $x+1$

Third no. = $x+2$

ATQ,

$$x^2 + (x+1)^2 + (x+2)^2 = 149$$

$$x^2 + x^2 + 2x + 1 + x^2 + 4x + 4 = 149$$

$$3x^2 + 6x + 5 - 149 = 0$$

$$3x^2 + 6x - 144 = 0$$

$$x^2 + 2x - 48 = 0$$

$$x^2 + 8x - 6x - 48 = 0$$

$$x(x+8) - 6(x+8) = 0$$

$$(x+8)(x-6) = 0$$

$$x+8=0$$

$$\boxed{x=-8}$$

(Neglected)

$$x-6=0$$

$$\boxed{x=6}$$

Hence, the three consecutive no. are 6, 7 & 8.

Let the first no. be x ,
 Second no. = $16 - x$

ATQ,

$$\frac{1}{x} + \frac{1}{16-x} = \frac{1}{3}$$

$$\frac{16-x+x}{x(16-x)} = \frac{1}{3}$$

$$\frac{16}{16x-x^2} = \frac{1}{3}$$

$$16 \times 3 = 16x - x^2$$

$$x^2 - 16x + 48 = 0$$

$$x^2 - 12x - 4x + 48 = 0$$

$$x(x-12) - 4(x-12) = 0$$

$$(x-12)(x-4) = 0$$

$$x - 12 = 0$$

$$\boxed{x = 12}$$

$$x - 4 = 0$$

$$\boxed{x = 4}$$

CASE I

If first no. is 12, then second no. is 4.

CASE II

If first no. is 4, then second no. is 12.

Let the first multiple of 3 be x .
 Second multiple = $x + 3$

ATQ,

$$x(x+3) = 270$$

$$x^2 + 3x = 270$$

$$x^2 + 3x - 270 = 0$$

$$x^2 + 18x - 15x - 270 = 0$$

$$x(x+18) - 15(x+18) = 0$$

$$(x+18)(x-15) = 0$$

$$x+18=0$$

$$x = -18$$

$$x-15=0$$

$$x = 15$$

Hence, the no. are either -18, -15 or 15, 18

Ch-4

Exercise 4.7

21 Let the no. be x

$$\text{Reciprocal} = \frac{1}{x}$$

ATQ,

$$x + \frac{1}{x} = \frac{17}{4} = \frac{(4-x)(4+x)}{4}$$

$$\frac{x^2 + 1}{x} = \frac{17}{4}$$

$$4x^2 + 4 = 17x$$

$$4x^2 - 17x + 4 = 0$$

$$4x^2 - 16x - x + 4 = 0$$

$$4x(x-4) - 1(x-4) = 0$$

$$(x-4)(4x-1) = 0$$

$$x-4 = 0$$

$$\boxed{x = 4}$$

$$4x-1 = 0$$

$$\boxed{x = \frac{1}{4}}$$

Hence, the no. is 4 or $\frac{1}{4}$.

22 Let the ones digit be x .

Product of two digits = 8

$$\text{Tens digit} = \frac{8}{x}$$

ATQ,

$$\frac{x + 80}{x} - 18 = \frac{8}{x} + 10x$$

$$\frac{x^2 + 80}{x} - 18x = \frac{8 + 10x^2}{x}$$

$$10x^2 - x^2 + 18x - 80 + 8 = 0$$

$$9x^2 + 18x - 72 = 0$$

$$x^2 + 2x - 8 = 0$$

$$x^2 + 4x - 2x - 8 = 0$$

$$x(x+4) - 2(x+4) = 0$$

$$(x+4)(x-2) = 0$$

$$x+4 = 0$$

$$\boxed{x = -4}$$

(Neglected)

$$x-2 = 0$$

$$\boxed{x = 2}$$

$$\therefore \text{Number} = \frac{x+80}{x} = \frac{2+80}{2} = 41$$

Q. 25 Let the first no. be x .
Second no. = $x-3$

ATQ,

$$x(x-3) = 504$$

$$x^2 - 3x = 504$$

$$x^2 - 3x - 504 = 0$$

$$x^2 - 24x + 21x - 504 = 0$$

$$x(x-24) + 21(x-24) = 0$$

$$(x-24)(x+21) = 0$$

$$x-24 = 0$$

$$\boxed{x = 24}$$

$$x+21 = 0$$

$$\boxed{x = -21}$$

Hence, the two no. are either 24, 21 or -21, -24

26 Let the first no. be x
Second no. = $x - 4$

ATQ,

$$x(x-4) = 192$$

$$x^2 - 4x = 192$$

$$x^2 - 4x - 192 = 0$$

$$x^2 - 16x + 12x - 192 = 0$$

$$x(x-16) + 12(x-16) = 0$$

$$(x-16)(x+12) = 0$$

$$x - 16 = 0$$

$$x = 16$$

$$x + 12 = 0$$

$$x = -12$$

Hence, the two no. are either 16, 12 or -12, -16.

27 Let the ones digit be x and the tens digit be y .
Number = $x + 10y$

ATQ,

$$x + 10y = 4(x + y)$$

$$x + 10y = 4x + 4y$$

$$x - 4x = 4y - 10y$$

$$-3x = -6y$$

$$x = 2y$$

①

ATQ,

$$x + 10y = 2xy$$

$$2y + 10y = 2(2y \times y) \text{ [Putting value of } x]$$

$$\begin{aligned}
 12y &= 4y^2 \\
 4y^2 - 12y &= 0 \\
 y^2 - 3y &= 0 \\
 y(y-3) &= 0
 \end{aligned}$$

$$\boxed{y=0} \quad \text{(Neglected)}$$

$$\begin{aligned}
 y-3 &= 0 \\
 \boxed{y=3}
 \end{aligned}$$

Putting value of y in ①

$$\begin{aligned}
 x &= 2y \\
 x &= 2(3) \\
 \boxed{x=6}
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Number} &= 6 + 10(3) = 6 + 30 \\
 &= \boxed{36}
 \end{aligned}$$

Q.29 Let the first no. be x .

Second no. = $18-x$

ATQ,

$$\frac{1}{x} + \frac{1}{18-x} = \frac{1}{4}$$

$$\frac{18-x+x}{x(18-x)} = \frac{1}{4}$$

$$\frac{18}{18x-x^2} = \frac{1}{4}$$

$$18 \times 4 = 18x - x^2$$

$$x^2 - 18x + 72 = 0$$

$$x^2 - 12x - 6x + 72 = 0$$

$$x(x-12) - 6(x-12) = 0$$

$$(x-12)(x-6) = 0$$

$$x-12=0$$

$$\boxed{x=12}$$

$$x-6=0$$

$$\boxed{x=6}$$

CASE I

If the first no. is 12, then second no. is 6.

CASE II

If the ~~first~~ first no. is 6, then second no. is 12.

Let the two no. be a and b ,

ATQ,

$$a = ~~15~~ 15 - b \quad \text{--- (1)}$$

ATQ,

$$\frac{1}{a} + \frac{1}{b} = \frac{3}{10}$$

$$\frac{a+b}{ab} = \frac{3}{10}$$

$$10a + 10b = 3ab$$

$$10(a+b) = 3ab$$

$$10 \times 15 = 3ab \quad (\text{Sum of } a \text{ \& } b = 15)$$

$$3ab = 150$$

$$3(15-b)(b) = 150$$

$$~~15-b^2 = 150~~$$

$$15b - b^2 = 150$$

$$3$$

$$b^2 - 15b + 50 = 0$$

$$b^2 - 10b - 5b + 50 = 0$$

$$b(b-10) - 5(b-10) = 0 \quad \left| \quad \begin{array}{l} b-10=0 \\ \boxed{b=10} \end{array} \right| \quad \left| \quad \begin{array}{l} b-5=0 \\ \boxed{b=5} \end{array} \right|$$

$$(b-10)(b-5) = 0$$

Hence, the no. are either 10, 5 or 5, 10

Q.3)

Let the first no. be x .

Second no. = $9-x$.

ATQ,

$$\frac{1}{x} + \frac{1}{9-x} = \frac{1}{2}$$

$$\frac{9-x+x}{9x-x^2} = \frac{1}{2}$$

$$9 \times 2 = 9x - x^2$$

$$x^2 - 9x + 18 = 0$$

$$x^2 - 6x - 3x + 18 = 0$$

$$x(x-6) - 3(x-6) = 0$$

$$(x-6)(x-3) = 0$$

$$x-6=0$$

$$\boxed{x=6}$$

$$x-3=0$$

$$\boxed{x=3}$$

Hence, the no. are 3 & 6.

Exercise 4.7

Q-32 Let the first no. be x
 Second no. = $x+1$
 Third no. = $x+2$

ATQ,

$$x^2 + (x+1)(x+2) = 46$$

$$x^2 + x^2 + x + 2x + 2 = 46$$

$$2x^2 + 3x + 2 - 46 = 0$$

$$2x^2 + 3x - 44 = 0$$

$$2x^2 + 11x - 8x - 44 = 0$$

$$x(2x+11) - 4(2x+11) = 0$$

$$(2x+11)(x-4) = 0$$

$$2x+11 = 0$$

$$\boxed{x = \frac{-11}{2}}$$

(Neglected)

$$x-4 = 0$$

$$\boxed{x = 4}$$

Hence, the no. are 4, 5, 6.

Q-33 Let the smaller no. be x .
 Larger no. = $2x-5$

ATQ,

$$(2x-5)^2 - x^2 = 88$$

$$4x^2 - 20x + 25 - x^2 = 88$$

$$3x^2 - 20x + 25 - 88 = 0$$

$$3x^2 - 20x - 63 = 0$$

$$3x^2 - 27x + 7x - 63 = 0$$

$$3x(x-9) + 7(x-9) = 0$$

$$(x-9)(3x+7) = 0$$

$$x-9=0$$

$$\boxed{x=9}$$

$$3x+7=0$$

$$\boxed{x = \frac{-7}{3}}$$

(Neglected)

$$\therefore \text{Smaller no.} = \boxed{9}$$

$$\text{Larger no.} = 2(9) - 5 = 18 - 5$$

$$= \boxed{13}$$

Q. 34

Let the smaller no. and larger no. be x and y respectively.

ATQ,

$$x^2 = 8y$$

$$y = \frac{x^2}{8}$$

— ①

ATQ,

$$y^2 - x^2 = 180$$

Putting value of y

$$\left(\frac{x^2}{8}\right)^2 - x^2 = 180$$

$$\frac{x^4}{64} - x^2 = 180$$

$$64$$

$$x^4 - 64x^2 = 180 \times 64$$

$$x^4 - 64x^2 - 11520 = 0$$

$$a = 1, b = -64, c = -11520$$

$$D = b^2 - 4ac$$

$$= (-64)^2 - [4 \times 1 \times (-11520)]$$

$$= 4096 + 46080 = 50176$$

$$x^2 = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x^2 = \frac{-(-64) \pm \sqrt{50176}}{2 \times 1}$$

$$x^2 = \frac{64 + 224}{2}$$

$$x^2 = \frac{288}{2} = 144$$

$$x = \pm \sqrt{144}$$

$$x = \pm 12$$

$$x^2 = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x^2 = \frac{-(-64) - \sqrt{50176}}{2 \times 1}$$

$$x^2 = \frac{64 - 224}{2}$$

$$x^2 = \frac{-160}{2} = -80$$

$$x = \pm \sqrt{-80}$$

(Neglected)

$$\text{If } x = 12,$$

$$\therefore \text{Smaller no.} = 12$$

$$\text{Larger no.} = \frac{(12)^2}{8} = \frac{144}{8} = 18$$

$$\text{If } x = -12$$

$$\therefore \text{Smaller no.} = -12$$

$$\text{Larger no.} = \frac{(-12)^2}{8} = \frac{144}{8} = 18$$

Hence, the two no. are 12, 18 or -12, 18.

35 Let the first integer be x .

Consecutive odd integer = $x + 2$

ATQ,

$$x^2 + (x+2)^2 = 970$$

$$x^2 + x^2 + 4x + 4 - 970 = 0$$

$$2x^2 + 4x - 966 = 0$$

$$x^2 + 2x - 483 = 0$$

$$x^2 + 23x - 21x - 483 = 0$$

$$x(x+23) - 21(x+23) = 0$$

$$(x+23)(x-21) = 0$$

$$x+23=0$$

$$\boxed{x = -23}$$

(Neglected)

$$x-21=0$$

$$\boxed{x = 21}$$

Hence, the no. are 21 & 23.

Q. 36

Let the larger no. be x .
Smaller no. = $x-3$

ATQ,

$$\frac{1}{x-3} - \frac{1}{x} = \frac{3}{28}$$

$$\frac{x - x + 3}{x^2 - 3x} = \frac{3}{28}$$

$$3 \times 28 = 3(x^2 - 3x)$$

$$x^2 - 3x - 28 = 0$$

$$x^2 - 7x + 4x - 28 = 0$$

$$x(x-7) + 4(x-7) = 0$$

$$(x-7)(x+4) = 0$$

$$x-7=0$$

$$\boxed{x = 7}$$

$$x+4=0$$

$$\boxed{x = -4}$$

(Neglected)

Hence, the two no. are 7 and 4

37 Let the first no. be x .

Consecutive odd no. = $x+2$

ATQ,

$$x^2 + (x+2)^2 = 394$$

$$x^2 + x^2 + 4x + 4 = 394$$

$$2x^2 + 4x + 4 - 394 = 0$$

$$2x^2 + 4x - 390 = 0$$

$$x^2 + 2x - 195 = 0$$

$$x^2 + 15x - 13x - 195 = 0$$

$$x(x+15) - 13(x+15) = 0$$

$$(x+15)(x-13) = 0$$

$$x+15 = 0$$

$$x = -15$$

$$x-13 = 0$$

$$x = 13$$

Hence, the no. are either -15, -13 or 13, 15

38 Let the first multiple of 7 be x .

Second multiple = $x+7$

ATQ,

$$x^2 + (x+7)^2 = 637$$

$$x^2 + x^2 + 49 + 14x = 637$$

$$2x^2 + 14x + 49 - 637 = 0$$

$$2x^2 + 14x - 588 = 0$$

$$x^2 + 7x - 294 = 0$$

$$x^2 + 21x - 14x - 294 = 0$$

$$x(x+21) - 14(x+21) = 0$$

$$(x+21)(x-14) = 0$$

$$x+21 = 0$$

$$\boxed{x = -21}$$

(Neglected)

$$x-14 = 0$$

$$\boxed{x = 14}$$

Hence, the two multiples are 14 and 21.

Q.39

Let the first even no. be x .

Second even no. = $x+2$

ATQ,

$$x^2 + (x+2)^2 = 340$$

$$x^2 + x^2 + 4x + 4 = 340$$

$$2x^2 + 4x - 336 = 0$$

$$x^2 + 2x - 168 = 0$$

$$x^2 + 14x - 12x - 168 = 0$$

$$x(x+14) - 12(x+14) = 0$$

$$(x+14)(x-12) = 0$$

$$x+14 = 0$$

$$\boxed{x = -14}$$

(Neglected)

$$x-12 = 0$$

$$\boxed{x = 12}$$

Hence, two even no. are 12 & 14.