

⑩ 7, 10, 13, ...

$$a = 7, d = 10 - 7 = 3$$

$$a_n = 55$$

$$a + (n-1)d = 55$$

$$7 + (n-1)3 = 55$$

$$\Rightarrow (n-1)3 = 48$$

$$\Rightarrow n-1 = 16$$

$$\Rightarrow n = 17$$

55 is 17<sup>th</sup> term of AP

⑪  $k^2 + 4k + 8, 2k^2 + 3k + 6, 3k^2 + 4k + 4$  are in AP

$$2[2k^2 + 3k + 6] = k^2 + 4k + 8 + 3k^2 + 4k + 4$$

$$\Rightarrow 4k^2 + 6k + 12 = 4k^2 + 8k + 12$$

$$\Rightarrow 2k = 0$$

$$\Rightarrow k = 0$$

⑫ let three terms be  $a-d, a, a+d$

$$\text{Sum} = 207$$

$$a-d + a + a+d = 207$$

$$\Rightarrow 3a = 207$$

$$\Rightarrow a = 69$$

$$\text{Prod of smaller two} = 4623$$

$$(a-d)a = 4623$$

$$(69-d)69 = 4623$$

$$\Rightarrow d = 2$$

∴ Three parts are

$$67, 69, 71$$

⑬ let the angles be  $(a-d)^\circ, a^\circ, (a+d)^\circ$

Sum of three angles = 180

$$a-d + a + a+d = 180$$

$$\Rightarrow 3a = 180$$

$$\Rightarrow a = 60$$

greatest angle = 2(smallest angle)

$$a+d = 2(a-d)$$

$$\Rightarrow a+d = 2a-2d$$

$$\Rightarrow a = 3d$$

$$\Rightarrow \frac{60}{3} = d$$

$$\Rightarrow d = 20$$

∴ angles are  $40^\circ, 60^\circ, 80^\circ$

⑭

$$9, 7, 5, \dots$$

$$a = 9$$

$$d = 7 - 9 = -2$$

$$24, 21, 18, \dots$$

$$a' = 24$$

$$d' = 21 - 24 = -3$$

$$a_n = a'_m$$

$$a + (n-1)d = a' + (m-1)d'$$

$$9 + (n-1)(-2) = 24 + (m-1)(-3)$$

$$-2(n-1) + 3(m-1) = 15$$

$$\Rightarrow m-1 = 15$$

$$\Rightarrow m = 16$$

$$a_{16} = a + 15d$$

$$= 9 + 15(-2)$$

$$= 9 - 30$$

$$= -21$$