

Worksheet 2015-10ED-00001(1)

(1) Complete the following tables and write down a formula for each set of data:

(a)

x	-4	-2	0	2	5	10
y	10	20	30	40	55	80

$$y = 5x + 30$$

(b)

x	-3	-1	0	3	5	6	10
y	9	1	0	9	25	36	100

$$y = x^2$$

(2) Complete the following 5 terms in each of the sequences. Also write the numeric pattern in words:

(a) $18; 17; 15; 12; 8; 3; -3; -10; -18$

Subtract one more each time!

(b) $-17; -13; -9; -5; -1; 3; 7; 11$

Add 4.

(c) $4; 5; 7; 11; 19; 35; 67; 131; 259; 515$

The number added, is double that of the previous number added

(3)

$\begin{array}{c} \cdot \cdot \cdot \\ \cdot \cdot \cdot \\ \cdot \cdot \cdot \\ P_1 \end{array}$	$\begin{array}{c} \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \\ P_2 \end{array}$	$\begin{array}{c} \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \cdot \\ P_3 \end{array}$	$\begin{array}{c} \cdot \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \cdot \cdot \\ P_4 \end{array}$
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Calculate the number of dots in the tenth pattern.

$$P_1 = 12 \quad P_2 = 14 \quad P_3 = 16 \quad P_4 = 18$$

$$\therefore P_n = 2n + 10$$

$$\therefore P_{10} = 2(10) + 10$$

$$= 20 + 10$$

$$P_{10} = 30$$

- (4) Jack's parents decide to start saving for his future on his first birthday. They start with R1 on his first birthday, R2 on his second birthday, R4 on his third birthday, R8 on his fourth birthday etc. Complete the table below and then answer the questions:

	Birthday:	Amount invested:	Exponential form:
(a)	1	R1	2^0
(b)	2	R2	2^1
(c)	3	R4	2^2
(d)	4	R8	2^3
(e)	5	R16	2^4
(f)	10	R512	2^9
(g)	21	R1 048 576	2^{20}
(h)	n	$R(2^{n-1})$	2^{n-1}

- (a) How much more did Jack's parents invest for him on his 8th birthday than on his 7th birthday?

$$\begin{aligned}
 & T_8 - T_7 \\
 &= 2^7 - 2^6 \\
 &= R128 - R64 \\
 &= R64 \text{ more}
 \end{aligned}$$

- (b) At which age will Jack become a millionaire?

On his 20th birthday.

$$T_{20} = 2^{19} = R524\ 288$$

and

$$T_1 + T_2 + T_3 + \dots + T_{19} > R500\ 000$$