

P. 16 # 1a, 2a, 3, 4, 5ad, 6ac, 7, 9, 11, 13

1. a) 16, 32, 48, 64, 80, ...

$$t_1 = 16, d = 32 - 16, \text{ next 3 terms: } 96, 112, 128$$

$$d = 16$$

Note: term 1 is written t_1 not $t|$

2. a) $t_1 = 5, d = 3$

$$5, 8, 11, 14$$

3. $t_n = 3n + 8$

a) $t_1 = 3 \cdot 1 + 8$

$$t_1 = 3 + 8$$

$$t_1 = 11$$

b) $t_7 = 3 \cdot 7 + 8$

$$t_7 = 21 + 8$$

$$t_7 = 29$$

c) $t_{14} = 3 \cdot 14 + 8$

$$t_{14} = 42 + 8$$

$$t_{14} = 50$$

4. a) $d = 23 - 19$
 $d = 4$

so subtract 4 from 19

$$\underline{7}, \underline{11}, \underline{15}, 19, 23$$

b) $d = \frac{3}{2} - 3$

$$d = 1.5 - 3$$

$$d = -1.5$$

so subtract -1.5 (which means add 1.5) from 3

$$\underline{6}, \underline{4.5}, 3, \underline{\frac{3}{2}}$$

c) $4, \overset{+d}{-}, \overset{+d}{-}, 10$

$$\text{so } 4 + 3d = 10$$

$$3d = 6$$

$$d = 2$$

$$\underline{2}, 4, \underline{6}, \underline{8}, 10$$

5. a) -4, 2, 8, ... 170

$$t_1 = -4$$

$$d = 6$$

$$t_n = t_1 + (n-1)d$$

term formula

$$170 = -4 + (n-1)6$$

$$170 = -4 + 6n - 6$$

$$170 = 6n - 10$$

$$180 = 6n$$

$$30 = n$$

$$170 = t_{30}$$

P. 16 cont.

5. d) $14, 12.5, 11, \dots, -10$ $t_1 = 14$ $-10 = 14 + (n-1)(-1.5)$
 $d = 12.5 - 14$ $-10 = 14 - 1.5n + 1.5$
 $d = -1.5$ $-10 = 15.5 - 1.5n$
 $-10 = t_{17}$ $-25.5 - 1.5n$
 $17 = n$

6 a) $t_1 = 6$ $\frac{6 + d \square + d \square + d \square}{t_1, t_2, t_3, t_4}$ $\frac{33}{t_4}$ so $6 + 3d = 33$
 $t_4 = 33$ $3d = 27$
 $d = 9$
 $t_2 = 6 + 9 = 15$
 $t_3 = 15 + 9 = 24$

c) $t_1 = 42$ $\frac{42 + d \square + d \square + d \square}{t_1, t_2, t_3, t_4}$ $\frac{27}{t_4}$ so $42 + 3d = 27$
 $t_4 = 27$ $3d = -15$
 $d = -5$
 $t_2 = 42 + (-5) = 37$
 $t_3 = 37 + (-5) = 32$

7. a) $t_1 = 5, t_2 = 8, t_3 = 11, t_4 = 14, t_5 = 17$

b) $t_1 = 5, d = 3$ so $t_n = 5 + (n-1)3$
 $t_n = 5 + 3n - 3$
 $t_n = 3n + 2$

c) $t_{50} = 3(50) + 2$ $t_{200} = 3(200) + 2$
 $t_{50} = 150 + 2$ $t_{200} = 600 + 2$
 $t_{50} = 152$ $t_{200} = 602$

d) The slope is the same as the common difference

e) The constant term is the y-intercept

p. 16 cont.

9. $t_{16} = 110$
 $d = 7$

$$t_n = t_1 + (n-1)d$$

$$110 = t_1 + (16-1)7$$

$$110 = t_1 + 105$$

$$5 = t_1$$

11. $5x+2$
 $7x-4$
 $10x+6$

$$7x-4 - (5x+2) = d$$

$$7x-4 - 5x - 2 = d$$

$$2x-6 = d$$

$$10x+6 - (7x-4) = d$$

$$10x+6 - 7x + 4 = d$$

$$3x+10 = d$$

If d equals both expressions then the two expressions must be equal

so $2x-6 = 3x+10$

$$-6 = x+10$$

$$-16 = x$$

When multiplying by a negative, put it in brackets!

Then $5(-16)+2 =$ and $7(-16)-4 =$ and $10(-16)+6 =$

$$-80+2 =$$

$$-112-4 =$$

$$-160+6 =$$

$$-78$$

$$-116$$

$$-154$$

13.

Figure #	perimeter
1	10
2	16
3	22
4	28

$$d = 6$$

a) $t_n = 10 + (n-1)6$
 $t_n = 10 + 6n - 6$
 $t_n = 6n + 4$

b) $t_9 = 6 \cdot 9 + 4$
 $t_9 = 54 + 4$
 $t_9 = 58$

c) $76 = 6n + 4$
 $72 = 6n$
 $12 = n$