

## Exercises from Page 2

### 1. Problem 1

- (a)  $11^2$ . Let  $b = 1$ .  
 $11^2 = (11 - 1)(11 + 1) + 1^2 = 10 \cdot 12 + 1 = 120 + 1 = 121$
- (b)  $12^2$ . Let  $b = 2$ .  
 $12^2 = (12 - 2)(12 + 2) + 2^2 = 10 \cdot 14 + 4 = 140 + 4 = 144$
- (c)  $13^2$ . Let  $b = 3$ .  
 $13^2 = (13 - 3)(13 + 3) + 3^2 = 10 \cdot 16 + 9 = 160 + 9 = 169$
- (d)  $14^2$ . Let  $b = 4$ .  
 $14^2 = (14 - 4)(14 + 4) + 4^2 = 10 \cdot 18 + 16 = 180 + 16 = 196$
- (e)  $15^2$ . Let  $b = 5$ .  
 $15^2 = (15 - 5)(15 + 5) + 5^2 = 10 \cdot 20 + 25 = 200 + 25 = 225$
- (f)  $16^2$ . Let  $b = 6$ .  
 $16^2 = (16 - 6)(16 + 6) + 6^2 = 10 \cdot 22 + 36 = 220 + 36 = 256$
- (g)  $17^2$ . Let  $b = 7$ .  
 $17^2 = (17 - 7)(17 + 7) + 7^2 = 10 \cdot 24 + 49 = 240 + 49 = 289$
- (h)  $18^2$ . Let  $b = 8$ .  
 $18^2 = (18 - 8)(18 + 8) + 8^2 = 10 \cdot 26 + 64 = 260 + 64 = 324$
- (i)  $19^2$ . Let  $b = 9$ .  
 $19^2 = (19 - 9)(19 + 9) + 9^2 = 10 \cdot 28 + 81 = 280 + 81 = 361$

### 2. Problem 2

- (a)  $28^2$ . Let  $b = 2$ .  
 $28^2 = (28 - 2)(28 + 2) + 2^2 = 26 \cdot 30 + 4 = 780 + 4 = 784$
- (b)  $29^2$ . Let  $b = 1$ .  
 $29^2 = (29 - 1)(29 + 1) + 1^2 = 28 \cdot 30 + 1 = 840 + 1 = 841$
- (c)  $31^2$ . Let  $b = 1$ .  
 $31^2 = (31 - 1)(31 + 1) + 1^2 = 30 \cdot 32 + 1 = 960 + 1 = 961$
- (d)  $32^2$ . Let  $b = 2$ .  
 $32^2 = (32 - 2)(32 + 2) + 2^2 = 30 \cdot 34 + 4 = 1020 + 4 = 1024$

### 3. Problem 3

- (a)  $48^2$ . Let  $b = 2$ .  
 $48^2 = (48 - 2)(48 + 2) + 2^2 = 46 \cdot 50 + 4 = 2300 + 4 = 2304$
- (b)  $49^2$ . Let  $b = 1$ .  
 $49^2 = (49 - 1)(49 + 1) + 1^2 = 48 \cdot 50 + 1 = 2400 + 1 = 2401$
- (c)  $51^2$ . Let  $b = 1$ .  
 $51^2 = (51 - 1)(51 + 1) + 1^2 = 50 \cdot 52 + 1 = 2600 + 1 = 2601$

(d)  $52^2$ . Let  $b = 2$ .  
 $52^2 = (52 - 2)(52 + 2) + 2^2 = 50 \cdot 54 + 4 = 2700 + 4 = 2704$

4. Problem 4

(a)  $97^2$ . Let  $b = 3$ .  
 $97^2 = (97 - 3)(97 + 3) + 3^2 = 94 \cdot 100 + 9 = 9400 + 9 = 9409$

(b)  $98^2$ . Let  $b = 2$ .  
 $98^2 = (98 - 2)(98 + 2) + 2^2 = 96 \cdot 100 + 4 = 9600 + 4 = 9604$

(c)  $99^2$ . Let  $b = 1$ .  
 $99^2 = (99 - 1)(99 + 1) + 1^2 = 98 \cdot 100 + 1 = 9800 + 1 = 9801$

(d)  $101^2$ . Let  $b = 1$ .  
 $101^2 = (101 - 1)(101 + 1) + 1^2 = 100 \cdot 102 + 1 = 10200 + 1 = 10201$

(e)  $102^2$ . Let  $b = 2$ .  
 $102^2 = (102 - 2)(102 + 2) + 2^2 = 100 \cdot 104 + 4 = 10400 + 4 = 10404$

### Exercises from Page 3

1. 99-101-20

$$101^2 - 99^2 = (101 - 99)(101 + 99) = 2 \cdot 200 = 20^2$$

2. 60-61-11

$$61^2 - 60^2 = (61 - 60)(61 + 60) = 1 \cdot 121 = 11^2$$

3. 8-15-17

$$17^2 - 15^2 = (17 - 15)(17 + 15) = 2 \cdot 32 = 8^2$$

4. 16-63-65

$$65^2 - 63^2 = (65 - 63)(65 + 63) = 2 \cdot 128 = 16^2$$