

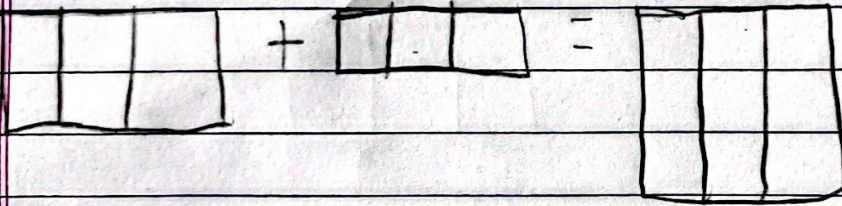
Find Patterns HW

Problem 1

a Let us consider 2 and 3 as an example
 $2 \times 3 + 3$ is equal to 3 square.
 I noticed that for all given examples
 the answer is square of the bigger
 number.

b Pattern using algebra
 $n \times (n+1) + (n+1) = (n+1)^2$

c Pattern using diagram
 $2 \times 3 + 3 = 9$

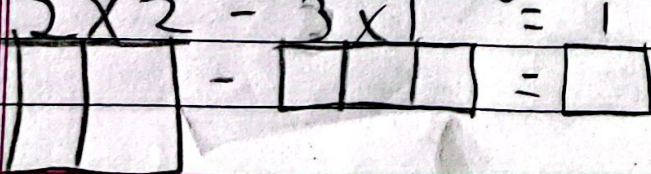


Problem 2

a Pattern using numbers
 $2 \times 2 - 3 \times 1 = 1$
 $4 \times 4 - 5 \times 3 = 1$
 $8 \times 8 - 9 \times 7 = 1$

b Pattern using algebra
 $n^2 - (n+1) \times (n-1) = 1$

c Pattern using diagram
 $2 \times 2 - 3 \times 1 = 1$



Problem 3

a Numeric pattern

I created below patterns

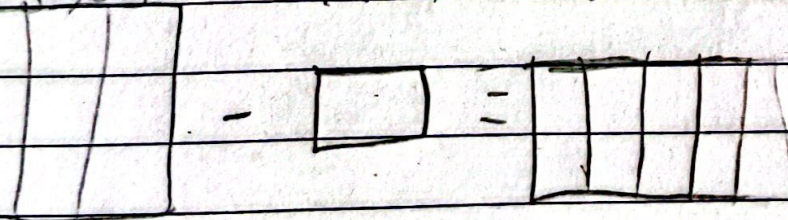
- 1 $3 \times 3 - 1 \times 1 = 8$
- 2 $4 \times 4 - 2 \times 2 = 12$
- 3 $5 \times 5 - 3 \times 3 = 16$
- 4 $6 \times 6 - 4 \times 4 = 20$
- 5 $7 \times 7 - 5 \times 5 = 24$
- 6 $8 \times 8 - 6 \times 6 = 28$
- 7 $9 \times 9 - 7 \times 7 = 32$
- 8 $10 \times 10 - 8 \times 8 = 36$

b Algebraic pattern

- 1 $n \times n - (n-2) \times (n-2) = x$
- 2 $n \times n - (n-2) \times (n-2) = (x+4)$
- 3 $n \times n - (n-2) \times (n-2) = (x+8)$

c Pattern in diagram

$$3 \times 3 - 1 \times 1 = 8$$



d Pattern in words

I noticed that by each increasing pattern the answer of equation increases by 4.