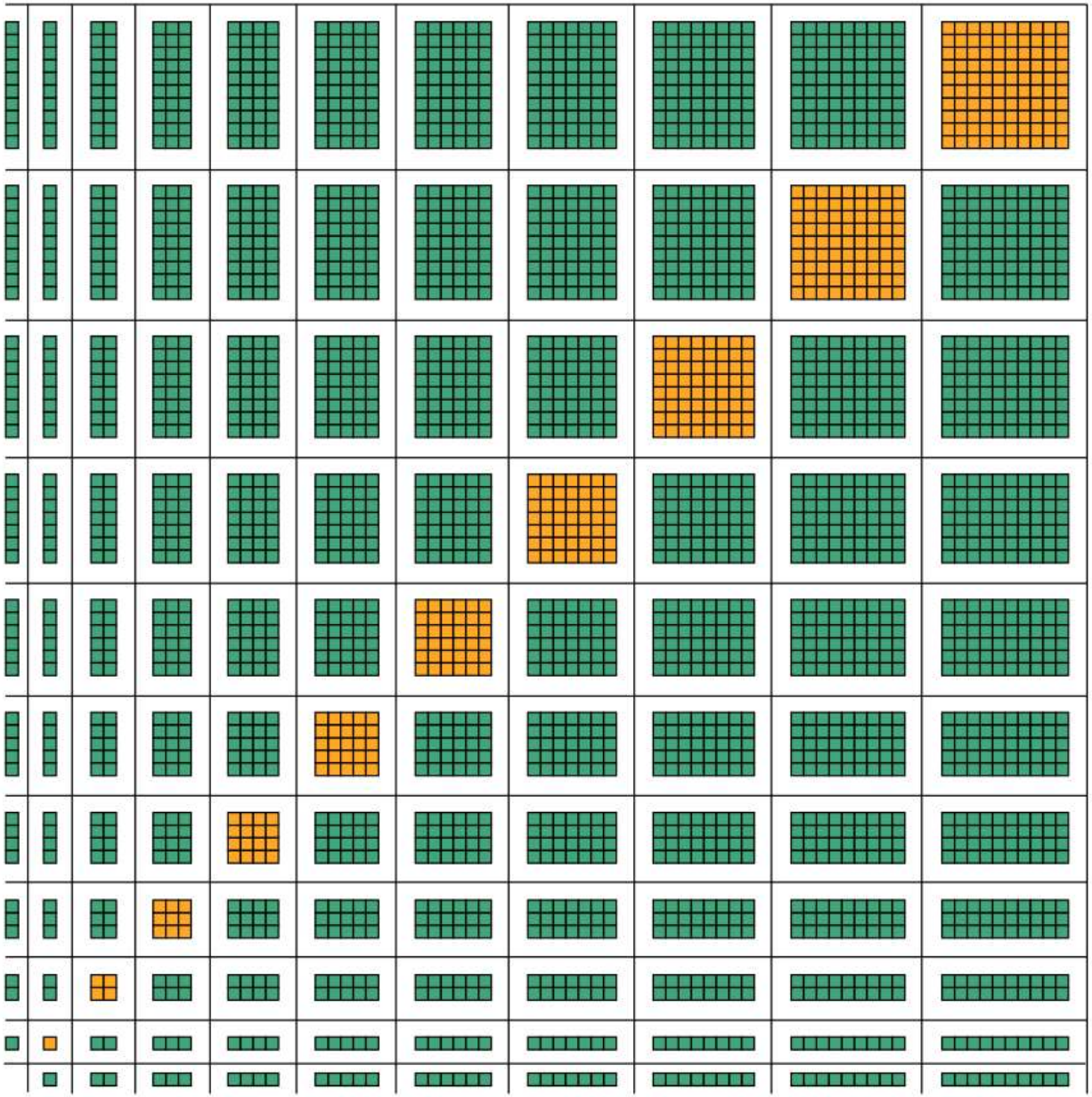
Did you know ?...

This is a visual representation of a multiplication square.



What do you notice?

Can you see

- square numbers?
- prime numbers?

Expanding 1

1. Which of the following are the same as

3(4 + 10)

3 x 4 + 10

(3 x 4) +(3 x10)

3 x 14

3 + 14

2. Which of these are the same calculation as

24 x 14

12 x 2 x 14

6 x 4 x 2 x 14

3 x 7 x 8 x 2

2 x 7 x 6 x 4

3. Expand $4(x + 5)$

4. Calculate $\frac{5}{6}(2 + \frac{3}{5})$

give your answer in simplest form

5. Which expression is the odd one out?

(20 x 8) + (4 x 8)

2 x 4 x 2 x 6

(12 x 8) + (12 x 8)

8(20 + 4)

24 x 8

6. Which of these expressions are the same

$12(x + 1)$

$4(3x + 2)$

$2(6x + 3)$

$6(2x + 1)$

7. Expand $-3(2y + x)$

8. 4 people have $(x + 3)$ apples each and 5 people have $(x - 4)$ apples each.

Write an expression, in its simplest form, for the total number of apples

Expanding 1

Solutions on the next 2 slides….

Expanding 1 Solutions

1. Which of the following are the same as

   3(4 + 10)

   → 3 x 4 + 10 ; (3 x 4) + (3 x 10) ; 3 x 14 ; 3 + 14

2. Which of these are the same calculation as

   24 x 14

   → 12 x 2 x 14 ; 6 x 4 x 2 x 14 ; 3 x 7 x 8 x 2 ; 2 x 7 x 6 x 4

3. Expand $4(x + 5)$

   → $= 4x + 20$

4. Calculate $\frac{5}{6}(2 + \frac{3}{5})$

   give your answer in simplest form

   → $= \frac{5}{6} \times 2 + \frac{5}{6} \times \frac{3}{5} = \frac{10}{6} + \frac{15}{30}$

   $= \frac{10}{6} + \frac{3}{6} = \frac{13}{6} = 2\frac{1}{6}$

Unsure about any of these? Search Expanding single brackets

Expanding 2

1. Expand $y(2y-3)$

2. Expand $2x^2(3xy-2x^3)$

3. Expand and simplify
$$5(x-4)+3(2x+5)$$

4. Expand and simplify
$$4(\sqrt{2}-3)+2(\sqrt{2}+2)$$

5. Multiply the expressions y and $y+4$
Which of these expressions show the result?

$5y$	$y(y+4)$	y^2+4y	$4y+4$

6. A rectangle of width 3 cm and width $x+4$ cm, is made larger by doubling its side lengths. What is the area, in cm^2, of the larger rectangle ?

7. Expand and simplify $4-3(2-a+t)-t$

8. Expand and simplify $\frac{a}{2}(3+\frac{a}{4})+\frac{a}{3}(2+\frac{a}{2})$

Expanding 2

Solutions on the next slide….

Expanding 2 Solutions

1. Expand $y(2y-3)$ → $= 2y^2 - 3y$

2. Expand $2x^2(3xy - 2x^3)$ → $= 6x^3y - 4x^5$

3. Expand and simplify
$5(x-4) + 3(2x+5)$ → $= 5x - 20 + 6x + 15 = 11x - 5$

4. Expand and simplify
$4(\sqrt{2} - 3) + 2(\sqrt{2} + 2)$ → $= 4\sqrt{2} - 12 + 2\sqrt{2} + 4 = 6\sqrt{2} - 8$

Expanding 2 Solutions

5. Multiply the expressions y and $y + 4$
Which of these expressions show the result?

→ 5y | y(y+4) | $y^2 + 4y$ | $4y + 4$

6. A rectangle of width 3 cm and width $x + 4$ cm, is made larger by doubling its side lengths.
What is the area, in cm^2, of the larger rectangle ?

→ new length $= 2x + 8$
new width $= 6$
Area$= 6(2x + 8)\ or\ (12x + 48)cm^2$

7. Expand and simplify $4 - 3(2 - a + t) - t$

→ $= 4 - 6 + 3a - 3t - t$
$= 3a - 4t - 2$

8. Expand and simplify $\frac{a}{2}(3 + \frac{a}{4}) + \frac{a}{3}(2 + \frac{a}{2})$

→ $= \frac{3a}{2} + \frac{a^2}{8} + \frac{2a}{3} + \frac{a^2}{6} = \frac{a^2}{8} + \frac{a^2}{6} + \frac{3a}{2} + \frac{2a}{3}$

$= \frac{3a^2}{24} + \frac{4a^2}{24} + \frac{36a}{24} + \frac{16a}{24}$

$= \frac{7a^2+52a}{24}$