

HILLEL ACADEMY HIGH SCHOOL
MATHEMATICS
GRADE 9
EXPANSION

*Instructions: Answer all questions on folder paper in BLACK or BLUE ink PEN.
Ensure that ALL working is NEATLY shown on your answer sheet*

Expand and simplify the following:

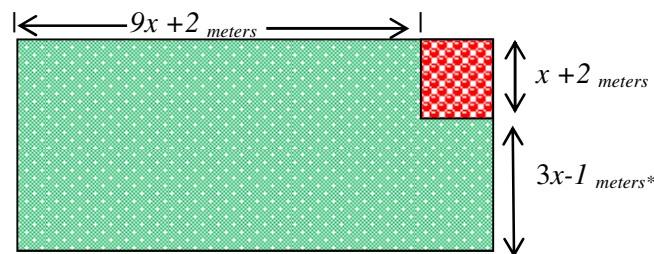
1. $4 - 5(3y - 4) - 2(9 - 6y) + 8(1 - 2y)$
2. $\frac{1}{2}(3a - 4b) - \frac{2}{5}(10a - 6b) + \frac{3}{4}(6a - 10b)$
3. $\frac{2}{x}(3x^2 - 2x + 4xy) - \frac{3}{y}(10y^2 + 6y - 3xy) - (3x - 7y + 2)$
4. $(2x - 5)(3x + 6)$
5. $(2x + 4y)(3x - 5y + 8)$
6. $(7 - 3x)(7 + 3x)$
7. $(\frac{2}{3}y + \frac{3}{4})(\frac{2}{3}y - \frac{3}{4})$
8. $(3x^2 - 5y^3)(3x^2 + 5y^3)$
9. $(5\sqrt{x} + 3)(5\sqrt{x} - 3)$
10. $(11x - 5)^2$
11. $(\frac{2x}{y} + \frac{1}{4})^2$
12. $(\sqrt{5x} + 2)^2$
13. $(x - 5)^2 - 2(3x + 3)(3x - 3)$

Use expansion to calculate the following:

14. 32×28
15. 99^2
16. 51^2
17. $(\sqrt{2} + 3)(\sqrt{2} - 3)$
18. $(5\sqrt{10} - 8)(5\sqrt{10} + 8)$
19. $(\sqrt{3} + 2)^2$

Read the following questions carefully before answering. Expand and simply each expression in your final answer.

20. On the first Math test for the year Jordan got $x\%$ on the next test he got 5% more that double the first grade, on the third test is grade was 9% lower than the previous, on the last test for the term he got 7% less than triple the grade he got on the first test. Write an expression to represent :
- the grades he got on **EACH** test
 - his average for the 4 test grades [Remember: $AVERAGE = \frac{SUM\ OF\ ALL\ GRADES}{NUMBER\ OF\ GRADES}$]
21. On Monday Mary went to a store and purchased p lollipops at a price of $\$3p - 4$ each. On Tuesday she bought 6 less than double the amount of the same lollipops she purchased on Monday. Write an expression to represent the :
- number of lollipops she bought on Tuesday
 - total cost of the lollipops she bought on Monday [Remember: $TOTAL\ COST = QUANTITY \times PRICE\ OF\ EACH$]
 - total cost of the lollipops she bought on Tuesday [Remember: $TOTAL\ COST = QUANTITY \times PRICE\ OF\ EACH$]
22. Susan has a rectangular backyard. She creates a small square flower bed in the corner and covers the rest of the yard with grass to create a lawn. The dimensions as shown below:



Write an expression to represent the:

- length of the entire backyard
 - width of the entire backyard
 - area of the entire backyard
 - area of the flower bed
 - area covered in lawn
23. John has a put a fence around in his backyard with a length of $(5x - 2)$ meters and a width of $(3x + 1)$ meters.
- Write an expression for the area of the entire backyard
- He builds a pool in the center of his backyard so that each edge of the pool is $(x - 1)$ meters away from the surrounding fence. Make a sketch and write an expression to represent the:
- length of the pool
 - width of the pool
 - area of the pool
 - area of the yard around the pool