Review - Polynomials

Name Answer Key

Date

Simplify each expression.

1) $(8p^4 - 3p^2) + (2 - p^2)$

$8p^4 - 4p^2 + 2$

2) $(3b^2 + 7) + (5b^2 - 5)$

$8b^2 + 2$

3) $(6 - 4x^4) - (8 + 3x^4)$

$-7x^4 - 2$

4) $(8v^2 + 8v^4) - (7v^4 - 5v^2)$

$v^4 + 13v^2$

5) The dimensions of two rectangles are shown at the right.

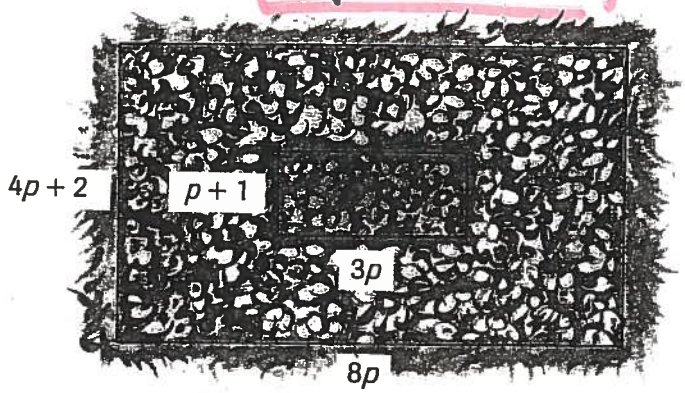
Find the polynomial representing:

a) the perimeter of the large rectangle; $P = 24p + 4$

b) the perimeter of the small rectangle; $P = 8p + 2$

c) the sum of the perimeters; $32p + 6$

d) the difference between the perimeters. $16p + 2$

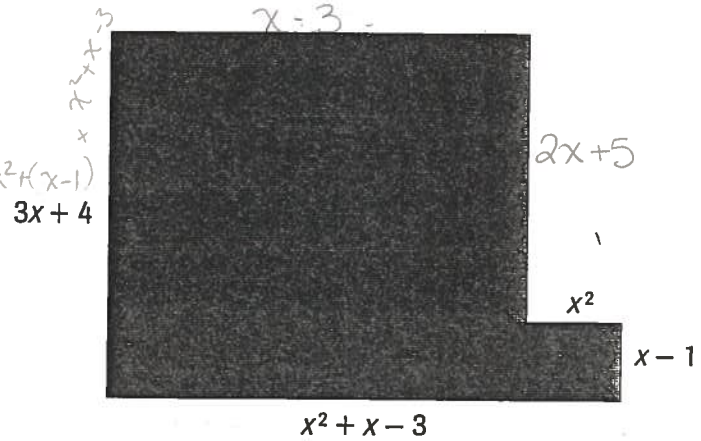


6) Find the polynomial representing the perimeter shown at the right.

P = add all sides

$P = (3x+4) + (x-3) + (2x+5) + x^2 + (x-1)$

$P = 2x^2 + 8x + 2$



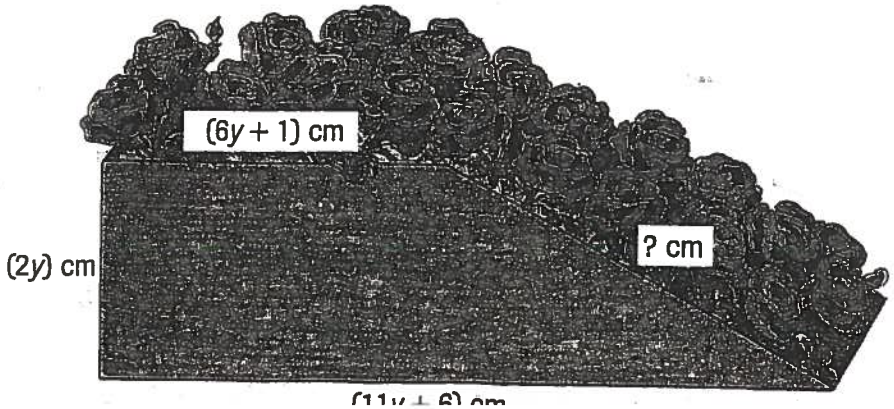
7) If the perimeter of the trapezoid shown at the right is expressed (22y + 6) cm, identify the missing polynomial.

$22y + 6 - (2y + 6y + 1 + 11y + 6)$

$22y + 6 - (19y + 7)$

$22y - 19y + 6 - 7$

$3y - 1$



Simplify. Your answer should contain only positive exponents.

1) $2a \cdot a$

$2a^2$

2) $3x^4 \cdot 5x^3 \cdot 8x$

$120x^8$

3) $4p^2 \cdot p$

$4p^3$

4) $4x^2 \cdot 2x^4$

$8x^6$

5) $n^3 \cdot 7n$

$7n^4$

6) $2v \cdot 7v \cdot 4v^2$

$56v^4$

Find each product.

7) $7(4a - 8)$

$28a - 56$

8) $4x(7x + 4)$

$28x^2 + 16x$

9) $-2(-7p^2 + 4p - 7)$

$14p^2 - 8p + 14$

10) $3n(-3n^2 - n + 2)$

$-9n^3 - 3n^2 + 6n$

11) $-m^6(4m^2 - 7m + 2)$

$-4m^8 + 7m^7 - 2m^6$

12) $-4x^2(5x^2 - 8x + 7)$

$-20x^4 + 32x^3 - 28x^2$

13) $(7x - 3)(-2x + 4)$

$-14x^2 + 34x - 12$

14) $(-6n + 7)(7n - 8)$

$-42n^2 + 97n - 56$

15) $(k - 8)(-6k + 4)$

$-6k^2 + 52k - 32$

16) $(-3r - 4)(-7r + 2)$

$21r^2 + 22r - 8$

17) $(-4m - 6n)(6m + 4n)$

$-24m^2 - 52mn - 24n^2$

18) $(5a - 6b)^2$

$(5a - 6b)(5a - 6b)$

$25a^2 - 30ab - 30ab + 36b^2$

$25a^2 - 60ab + 36b^2$

19) $(-5x - 4y)(5x + 6y)$

$-25x^2 - 50xy - 24y^2$

20) $(-x - y)(-8x - 8y)$

$8x^2 + 16xy + 8y^2$

21) $(-2a + 6b)(-6a + 4b)$

$12a^2 - 44ab + 24b^2$

22) $(5x - 2y)(8x + 5y)$

$40x^2 + 9xy - 10y^2$

Simplify. Your answer should contain only positive exponents.

23) $\frac{4r^3}{2r^2}$ $2r$

24) $\frac{8m^4}{8m^2}$ m^2

25) $\frac{4n^2}{8n^3}$ $\frac{1}{2n}$

26) $\frac{8p^4}{6p^3}$ $\frac{4p}{3}$

27) $\frac{5b}{2b^4}$ $\frac{5}{2b^3}$

28) $\frac{8x}{8x}$ 1

29) Find the quotient for each division.

a) $(2x^2 + 4x) \div 2x$

$x + 2$

b) $(3ab - 6a^2b^2) \div 3ab$

$1 - 2ab$

c) $(12xy - 4y + 8y^2) \div 4y$

$3x - 1 + 2y$

30) Divide.

a) $(x^2 + 2x + 1) \div (x + 1)$

$x+1$

b) $(x^2 - 2xy + y^2) \div (x - y)$

$x-y$

c) $(a^2 + 4a + 4) \div (a + 2)$

$a+2$

d) $(a^2 + 2ab + b^2) \div (a + b)$

$a+b$

e) $(x^3 - 1) \div (x - 1)$

$x^2 + x + 1$

$x-1 \overline{)\, x^3 - 1}$

$-\ x^3 - x^2$

$x^2 - 1$

$-\ x^2 - x$

$x - 1$

$-\ x - 1$

0

f) $(x^4 + 3x^3 - x - 3) \div (x + 3)$

$x^3 - 1$

31) Simplify.

a) $\frac{3a^2 + 6a}{3a}$

$a + 2$

b) $\frac{x^2 + 9x + 8}{x + 8}$

$\frac{(\cancel{x+8})(x+1)}{\cancel{x+8}}$

$x+1$

c) $\frac{8b^2 - 2b - 6}{2b - 2}$

$4b + 3$

$4b + 3$

$2b-2 \overline{)\, 8b^2 - 2b - 6}$

$-\ 8b^2 - 8b$

$6b - 6$

$-\ 6b - 6$

0

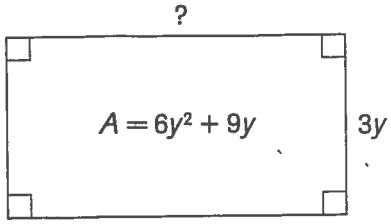
32) Find the polynomial corresponding to $\frac{x + 3x^2}{x} + 2x^2$.

$1 + 3x + 2x^2$

or $2x^2 + 3x + 1$

33) Given that A represents the area, identify the missing polynomial in each case.

a)



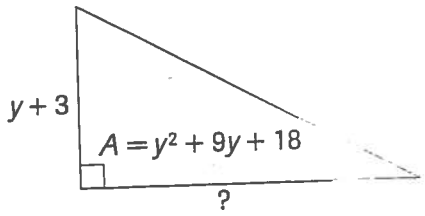
$A = B \times H = A$

$B = \frac{A}{H}$

$B = \frac{6y^2 + 9y}{3y}$

$\boxed{B = 2y + 3}$

b)



$A = \frac{b \times h}{2} = A$

$b \times h = \frac{2A}{h}$

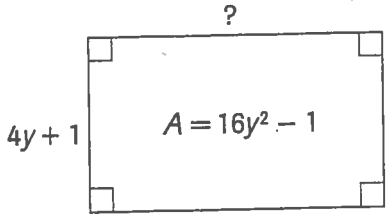
$b = \frac{2(y^2 + 9y + 18)}{y+3}$ or $\frac{2(y+6)(y+3)}{y+3}$

$b = \frac{2y^2 + 18y + 36}{y+3}$

$$\begin{array}{r} 2y + 12 \\ y+3 \overline{)\, 2y^2 + 18y + 36} \\ -\ 2y^2 + 6y \\ \hline 12y + 36 \\ -\ 12y + 36 \\ \hline 0 \end{array}$$

$\boxed{b = 2y + 12}$

c)



$$\begin{array}{r} 4y - 1 \\ 4y+1 \overline{)\, 16y^2 - 1} \\ -\ 16y^2 + 4y \\ \hline -\ 4y - 1 \\ -\ 4y - 1 \\ \hline 0 \end{array}$$

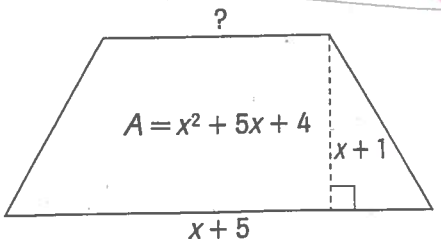
$A = B \times H = A$

$B = \frac{A}{H}$

$B = \frac{16y^2 - 1}{4y+1} \rightarrow \frac{(4y+1)(4y-1)}{4y+1}$

$\boxed{B = 4y - 1}$

d)



$A = \frac{(B+b)}{2} h = \frac{2A}{h}$

$b = \frac{2A}{h} - B$

$b = \frac{2(x^2 + 5x + 4)}{x+1} - (x+5)$

$b = \frac{2(x+1)(x+4)}{x+1} - x - 5$

$\boxed{b = x + 3}$