

Name _____

Multiply.

1) $(x + 11)(x - 11)$

2) $(4 + m)(4 - m)$

3) $(6x + 5y)(6x - 5y)$

4) $(ab + 8)(ab - 8)$

5) $(n + 16)^2$

Simplify the expression.

6) $\left(\frac{1}{4}\right)^{-3}$

7) $\frac{5^{-2}}{4^{-3}}$

8) $\frac{1}{7^{-3}}$

9) $6^{-1} \cdot 6^3 \cdot 6^{-4}$

Simplify. Do not use negative exponents in your answer.

10) $(a^{-7}b^{-6})(a^{-6}b^{-9})$

11) $(x^8y^{-7}z^{-3})(x^{-2}y^{-4}z^7)$

Simplify the expression. Write the answer using positive exponents.

12) $\frac{y^{-14}}{y^3}$

13) $\frac{7x^{-3}}{y^{-6}z^{-2}}$

14) $\frac{(x + c)^{-33}}{(x + c)^{-5}}$

15) $(k^5)^{-6}(km)^4$

16) $\left(\frac{c}{2}\right)^{-3}$

17) $\left(\frac{4a}{b}\right)^{-2}$

Write the expression in standard form.

18) 8.72×10^6

19) 1.221×10^{-5}

Convert to scientific notation.

20) 570,000

21) 0.000281

Perform the indicated operation. Write the answer in standard notation.

22) $(8.6 \times 10^{-4})(7.4 \times 10^7)$

23) $\frac{10 \times 10^{-7}}{2 \times 10^3}$

Divide.

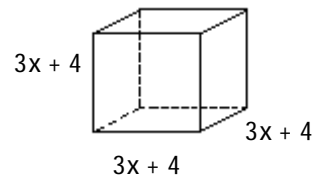
24) $\frac{a^6 - a}{a}$

25) $\frac{x^5 - 14x}{2x^2}$

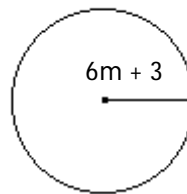
26) $\frac{7x^2 - 3x + 1}{21x}$

Solve the problem.

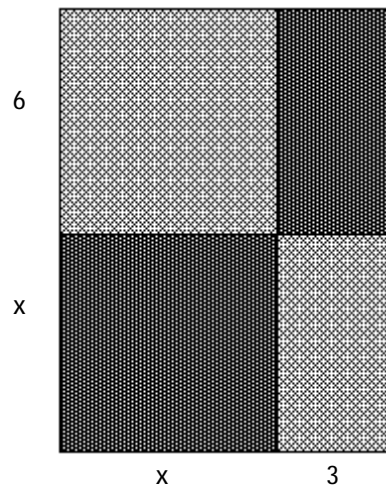
- 27) Find a polynomial that represents the volume of the cube.



- 28) Determine a polynomial that represents the area of the figure. Give an exact answer using the symbol π .



- 29) Find the total area of the darker shaded rectangles.



Answer Key

Testname: WKS_12.4_12.5_12.6

- 1) $x^2 - 121$
- 2) $16 - m^2$
- 3) $36x^2 - 25y^2$
- 4) $a^2b^2 - 64$
- 5) $n^2 + 32n + 256$
- 6) 64
- 7) $\frac{64}{25}$
- 8) 343
- 9) $\frac{1}{36}$
- 10) $\frac{1}{a^{13}b^{15}}$
- 11) $\frac{x^6z^4}{y^{11}}$
- 12) $\frac{1}{y^{17}}$
- 13) $\frac{7y^6z^2}{x^3}$
- 14) ~~$\frac{1}{(x+c)^2}$~~
- 15) $\frac{m^4}{k^{26}}$
- 16) $\frac{8}{c^3}$
- 17) $\frac{b^2}{16a^2}$
- 18) 8,720,000
- 19) 0.00001221
- 20) $5.7 \times 10^5 = 570,000$
- 21) $2.81 \times 10^{-4} = .000281$
- 22) $6.364 \times 10^4 = 63640$
- 23) $5 \times 10^{-10} = .0000000009$
- 24) $a^5 - 1$
- 25) $\frac{x^3}{2} - \frac{7}{x}$
- 26) $\frac{x}{3} - \frac{1}{7} + \frac{1}{21x}$
- 27) $27x^3 + 108x^2 + 144x + 64$
- 28) $36\pi m^2 + 36\pi m + 9\pi$
- 29) $x^2 + 18$