Laws of Exponents
Applications & Review

Find the area of each figure (use FSS).

1.
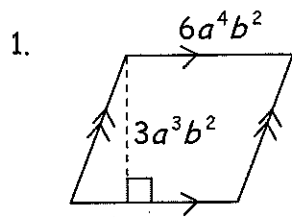
$6a^4b^2$

$3a^3b^2$
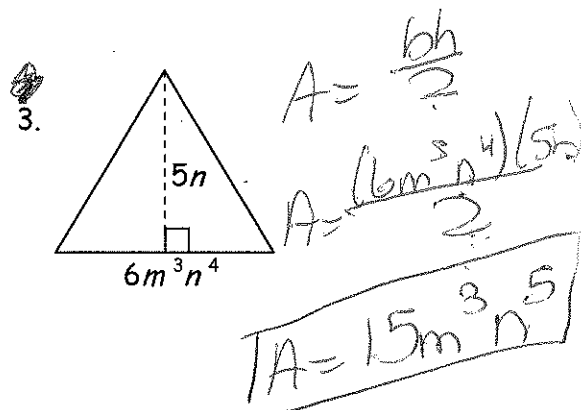
$A = bh$
$A = (6a^4b^2)(3a^3b^2)$
$A = 18a^7b^4$

2.
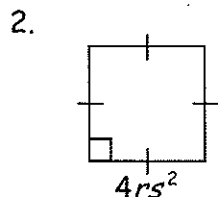
$4rs^2$

$A = s^2$
$A = (4rs^2)^2$
$A = 16r^2s^4$

3.

$5n$

$6m^3n^4$

$A = \frac{bh}{2}$
$A = \frac{(6m^3n^4)(5n)}{2}$
$A = 15m^3n^5$

4. A rectangle with length $5x^{-4}y^{-3}$ and width $3x^2y^3$ (FSS)

$A = lw$
$A = (5x^{-4}y^{-3})(3x^2y^3)$
$A = 15x^{-2}$ $\frac{15}{x^2}$
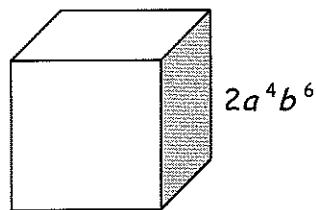
5. Find the volume of a rectangular prism whose dimensions are $3a^2b^4$, $4a^5$, and $4a^2b^2$. (FSS)

$V = lwh$
$V = (3a^2b^4)(4a^5)(4a^2b^2)$
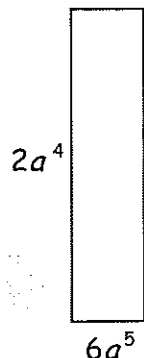$V = 48a^9b^6$

6. Find the volume of the cube. FSS
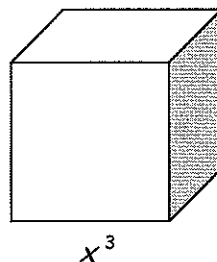
$2a^4b^6$

$V = s^3$
$V = (2a^4b^6)^3$
$V = 8a^{12}b^{18}$

7. Which expression(s) represent the area of the rectangle?

$2a^4$

$6a^5$

A. $8a^9$
B. $12a^{20}$
C. $(2a^4)(6a^5)$
D. $(2 \cdot 6)(a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a)$
E. $12a^9$
F. $8a^{20}$
G. $16a^{18}$

8. Which expression(s) represent the volume of the cube?

x^3

A. $x^3 \cdot x^3 \cdot x^3$
B. $3x^3$
C. $(x^3)^3$
D. x^9
E. x^6
F. $(x \cdot x \cdot x)(x \cdot x \cdot x)(x \cdot x \cdot x)$
G. x^{27}

9. $\dfrac{15m^5n}{15m^{18}}$

$\boxed{\dfrac{n}{m^{13}}}$

10. $\dfrac{8t^2}{6r^5t}$ $\overset{4}{}$ $\overset{3}{}$

$\boxed{\dfrac{4t}{3r^5}}$

11. $\dfrac{-16k^5p^{17}}{18k^3p^2}$ $\overset{-8}{}$

$\boxed{\dfrac{-8k^2p^{15}}{9}}$

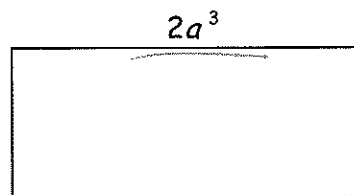12. $\dfrac{(x^2yz^4)(x^3y^5z)}{xy^2z^6}$ $\dfrac{x^5y^6z^5}{xy^2z^6}$

$\boxed{\dfrac{x^4y^4}{z}}$

13. A rectangular parking lot has an area of $10a^3b^6$ square yards. What is the width of the parking lot? FSS

$A = \ell w$

$w = \dfrac{A}{\ell}$

$w = \dfrac{10a^3b^6}{2a^3}$

$w = 5b^6$

$\boxed{w = 5b^6}$

$2a^3$

14. The lengths of the sides of a triangle are represented by $(3a^2+4), (4a-6)$ and (a^2+1). What is the perimeter of the triangle? FSS

$P = S + S + S$

$P = (3a^2+4) + (4a-6) + (a^2+1)$
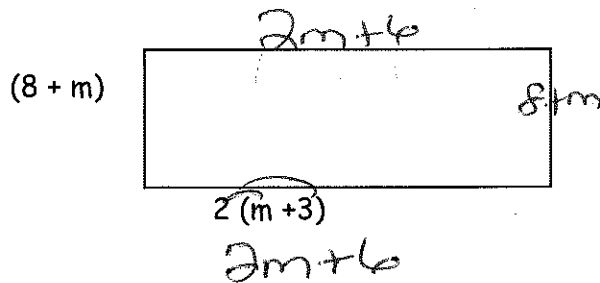
$\boxed{P = 4a^2+4a-1}$

15. Simplify the following expression. $4x(3x+5) - (-5x-1)$

$(4x)(3x) = 12x^2$

$12x^2 + 20x + 5x + 1$

$\boxed{12x^2 + 25x + 1}$

16. Write **two** equivalent expressions that can be used to represent the perimeter of the rectangle shown below.

$2m+6$

$(8 + m)$

$8+m$

$2(m+3)$

$2m+6$

1) $2((8+m)) + 2(m+3)$

2) $6m + 28$

$2(8+m) + 2(2m+6)$

17. Evaluate the following expressions:

a. $\left(\dfrac{2}{3}\right)^{-4}$

$\boxed{\dfrac{81}{16}}$

for fraction

$\cancel{\text{Alpha}}$ Alpha, Fi

b. $\dfrac{1}{3^{-2}}$

$\boxed{9}$

c. $\dfrac{v^2w}{z}$ for v = -5, w = 4 and z = -2

$\dfrac{(-5)^2(4)}{(-2)}$

$\boxed{-50}$