Intermediate Algebra Skill-Building Activity # Pf – 8 Recognizing Perfect Squares and Perfect Cubes

Strategy: Look at the exponents. The factors of a perfect square have exponents that are divisible by 2; the factors of a perfect cube have exponents that are divisible by 3.

Examples

1.
$$9a^4b^6 = 3^2a^4b^6 = \boxed{3a^2b^3}^2$$

2.
$$27x^6y^{15}z^9 = 3^3x^6y^{15}z^9 = \boxed{3x^2y^5z^3}$$

3.
$$16(n-1)^2 = 4^2(n-1)^2 = 4(n-1)^2$$

4.
$$\frac{8x^{12}}{125z^{21}} = \frac{2^3x^{12}}{5^3z^{21}} = \boxed{\frac{2x^4}{5z^7}}^3$$

5. $36c^4d^{15} = 6^2c^4d^{15}$ is NEITHER a perfect square nor a perfect cube since the exponents are not all divisible by 2 or by 3.

Intermediate Algebra Skill-Building Activity # Pf – 8 Recognizing Perfect Squares and Perfect Cubes

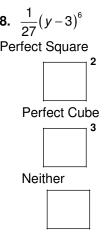
Decide whether the given expression is a perfect square or a perfect cube and write the correct rrect box.

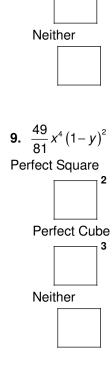
ex	pression in the co
1.	4x ⁸ Perfect Square
	Perfect Cube
	3
	Neither
4.	$\frac{1}{8}W^{36}$
	Perfect Square
	Perfect Cube
	3
	Neither

2.	25 <i>y</i> ¹⁶ Perfect Square	3.	8a ¹⁸ Perfect Square
	Perfect Cube		Perfect Cube
	Neither		Neither
5.	27 <i>a</i> ⁹ <i>b</i> ²⁴ Perfect Square	6.	64 <i>n</i> ⁸ <i>m</i> ²⁷ Perfect Square
	Perfect Cube		Perfect Cube
	Neither		Neither
	$\frac{1}{27}(y-3)^6$ rfect Square		$\frac{49}{81}x^4(1-y)^2$
. 6	Perfect Cube	re	rfect Square

$\frac{16a^{16}}{25b^{20}}$
Perfect Square
Perfect Cube
Neither
L

7.





Intermediate Algebra Skill-Building Activity # Pf – 8 Recognizing Perfect Squares and Perfect Cubes

Answers

- 1. $2x^4$
- 2. $5y^4$
- 3. $2a^6$
- $4. \quad \boxed{\frac{1}{2}w^{12}}$
- 5. $3a^3b^8$
- 6. neither
- 7. $\frac{4a^8}{5b^{10}}$
- 8. $\left[\frac{1}{3}(y-3)^2\right]^2$
- $9. \quad \boxed{\frac{7}{9}x^2(1-y)}$

Prepared by: Dr. Teresa V. Sutcliffe, Winter 2010