

Name:

Date:



مدرسة الاتحاد الوطنية الخاصة - العين
Al Ittihad National Private School - Al Ain

Grade 9 Worksheet

Lessons:

6.1 Define and Apply Dilations

1) Solve for n in each expression.

9. $\sqrt[6]{a} = a^n$

10. $\sqrt[9]{a} = a^n$

11. $\sqrt[3]{a^7} = a^n$

12. $\sqrt[3]{a^2} = a^n$

13. $\sqrt[7]{a^6} = a^n$

14. $\sqrt[4]{a^5} = a^n$

15. $\sqrt[5]{a^6} = a^n$

16. $\sqrt[4]{a^9} = a^n$

17. $\sqrt{a^3} = a^n$

Q2) Show two ways to evaluate each expression.

33. $4^{\frac{3}{2}}$

34. $9^{\frac{5}{2}}$

35. $8^{\frac{5}{3}}$

36. $27^{\frac{4}{3}}$

37. $64^{\frac{3}{2}}$

38. $16^{\frac{7}{4}}$

Q3) Describe the expression as a combination of a root and whole-number power.

44. $x^{\frac{2}{3}}$

45. $x^{\frac{1}{6}}$

46. $(7y)^{\frac{6}{5}}$

47. $(7y)^{\frac{7}{2}}$

Q4) Write each expression as a radical expression

52. $5^{\frac{3}{2}}$

53. $3^{\frac{7}{4}}$

54. $(-64)^{\frac{2}{3}}$

55. $81^{\frac{3}{4}}$

56. $t^{\frac{7}{6}}$

57. $(xy)^{\frac{9}{5}}$

58. $(16x)^{\frac{3}{4}}$

59. $(-25a)^{\frac{4}{9}}$

60. $\left(\frac{xy}{27}\right)^{\frac{5}{3}}$

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Q5) Write each radical expression as an expression with a rational exponent.

66. $(\sqrt[3]{8})^5$

67. $\sqrt[4]{49^3}$

68. $(\sqrt[4]{256})^2$

69. $\sqrt[5]{9^2}$

70. $\sqrt[7]{r^8}$

71. $\left(\sqrt[4]{\frac{a}{b}}\right)^6$

72. $(\sqrt[9]{-27x})^3$

73. $\left(\sqrt{\frac{xy}{4}}\right)^3$

74. $(\sqrt[6]{uv})^7$

Q6)  **Use Structure** Are the expressions $6^{\frac{6}{3}}$ and $6^{\frac{8}{4}}$ equivalent? Explain. If the bases were -6 instead of 6 , would your reasoning still hold true?