

## Algebra 1 - 1AL1.2: Roots & Rational Exponents

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### MULTIPLE CHOICE

1. Simplify the expression:  $x^{-5} \cdot x^5$

- a.  $x^{10}$
- b.  $x^0$
- c.  $x^{-25}$
- d. None of the above
- e. I don't know.

ANS: B                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2

OBJ: Students understand determining a root, simplifying a root and the meaning of a fractional power (rational exponents) and understand and use the rules of exponents.

LOC: HIAG-2 U4 L4

TOP: Algebra 1                      KEY: exponents

MSC: Dynamic

2. Simplify the expression:  $y^{-1}x \cdot x^{-4}y$

- a.  $y^0x^{-3}$
- b.  $y^{-1}x^{-4}$
- c.  $y^{-1}x^{-3}$
- d. I don't know.

ANS: A                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2

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3. Simplify the expression:  $(x^3)^{-4}$

- a.  $x^{-12}$
- b.  $x^{-1}$
- c.  $x^{-7}$
- d. None of the above
- e. I don't know.

ANS: A                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2

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4. Simplify the expression:  $x + x^{-5}$

- a.  $x^{-5}$
- b.  $x^6$
- c.  $x^{-4}$
- d. None of the above
- e. I don't know.

ANS: D                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2

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LOC: HIAG-2 U4 L4                      TOP: Algebra 1                      KEY: exponents

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5. Simplify the expression:  $\frac{x^5}{x^{-5}}$

- a.  $x^{-25}$
- b.  $x^{10}$
- c.  $x^0$
- d. None of the above
- e. I don't know.

ANS: B                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2

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6. Rewrite the expression above without a negative exponent:  $x^{-4}$

- a.  $\frac{1}{x^4}$
- b.  $\frac{-1}{x^4}$
- c.  $\frac{-1}{x^{-4}}$
- d. I don't know how to do this.

ANS: A                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2

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7. Rewrite the expression without a negative exponent:  $(\frac{-1}{4})^{-3}$

a.  $\frac{1}{4^3}$

c.  $(\frac{-4}{-1})^3$

b.  $(\frac{4}{-1})^3$

d. I don't know how to do this.

ANS: B PTS: 1 DIF: Grade 8 REF: 1AL1.2

OBJ: Students understand determining a root, simplifying a root and the meaning of a fractional power (rational exponents) and understand and use the rules of exponents.

LOC: HIAG-2 U4 L4 TOP: Algebra 1 KEY: exponents

MSC: Dynamic

8.  $(4)^{1/4}$  Which of the following is an equivalent expression?

a.  $\frac{1}{(4)^4}$

c.  $(\frac{1}{4})^4$

b.  $\sqrt[4]{4}$

d. I don't know how to do this.

ANS: B PTS: 1 DIF: Grade 8 REF: 1AL1.2

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MSC: Dynamic

9.  $\sqrt{58}$  Rewrite in simplest radical form.

a.  $2\sqrt{29}$

d.  $58\sqrt{2}$

b.  $\sqrt{58}$

e. I don't know how to do this.

c. 7.615773105864

ANS: B PTS: 1 DIF: Grade 8 REF: 1AL1.2

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LOC: HIAG-2 U4 L4 TOP: Algebra 1 KEY: exponents

MSC: Dynamic

10. Simplify the expression:  $\sqrt{3} \times \sqrt{8} \times \sqrt{6}$

a. 12

d.  $\sqrt{17}$

b.  $\sqrt{3\sqrt{8\sqrt{6}}}$

e. I don't know

c.  $24\sqrt{6}$

ANS: A PTS: 1 DIF: Grade 8 REF: 1AL1.2

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LOC: HIAG-2 U4 L4 TOP: Algebra 1 KEY: roots | exponents

MSC: Dynamic

11.  $117 = x^2$  Solve for  $x$ .

- a. 10.816653826392
- b. 13689
- c.  $\sqrt{117}$
- d. More than one possible answer
- e. I don't know

ANS: D                    PTS: 1                    DIF: Grade 8                    REF: 1AL1.2  
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MSC: Dynamic

12.  $56 = x^2$  Solve for  $x$ . Which of the following are solutions?

- I. 3136
- II.  $2\sqrt{14}$
- III.  $-\sqrt{56}$
- a. Only I
- b. Both II and III
- c. Only II
- d. Both I and II
- e. I don't know

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13.  $80 = \sqrt{x}$  Solve for  $x$ .

- a. 80
- b.  $\sqrt{80}$
- c. 6400
- d. More than one possible answer
- e. I don't know

ANS: C                    PTS: 1                    DIF: Grade 8                    REF: 1AL1.2  
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14.  $6 = \sqrt[3]{x}$  Solve for  $x$ .

- a.  $\sqrt{6}$
- b. 216
- c. 36
- d. More than one possible answer
- e. I don't know

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MSC: Dynamic

15.  $(3)^{1/3}$  Which of the following is an equivalent expression?

- a.  $(\frac{1}{3})^3$
- b.  $\sqrt[3]{3}$
- c.  $\sqrt{3^3}$
- d.  $(3)^{-3}$
- e. I don't know.

ANS: B                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2  
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KEY: exponents | rational exponents                      MSC: Dynamic

16.  $(14)^{5/2}$  Which of the following is an equivalent expression?

- a.  $\sqrt[2]{14}$
- b.  $\sqrt[2]{14^5}$
- c.  $\sqrt[5]{14^2}$
- d.  $(\frac{5}{2})^{14}$
- e. I don't know.

ANS: B                      PTS: 1                      DIF: Grade 8                      REF: 1AL1.2  
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