

# Chapter 4

NO CALCULATOR

① Which of the following statements are true?

I.	$\sqrt{4} = 2$ since $2 \times 2 = 4$
II.	$\sqrt{8} = 4$ since $4 + 4 = 8$
III.	$\sqrt[3]{27} = 3$ since $3 \times 3 \times 3 = 27$
IV.	$\sqrt[3]{81} = 9$ since $9 \times 9 = 81$

- A. I and III only
- B. I and IV only
- C. II and III only
- D. II and IV only

② Simplify:  $\sqrt{72}$

- A.  $2\sqrt{6}$
- B.  $6\sqrt{2}$
- C.  $18\sqrt{2}$
- D.  $36\sqrt{2}$

③ Evaluate:  $16^{-\frac{3}{4}}$

- A. -8
- B.  $\frac{1}{8}$
- C.  $\frac{1}{2}$
- D. 2

④ Express  $2\sqrt{5}$  as an entire radical.

- A.  $\sqrt{10}$
- B.  $\sqrt{20}$
- C.  $\sqrt{50}$
- D.  $\sqrt{100}$

- 5 Order the numbers from the smallest value to the largest value.

I.	$-3\sqrt{2}$
II.	$\sqrt{9}$
III.	$2\sqrt{3}$
IV.	$-2\sqrt{7}$

- A. I, IV, II, III  
 B. I, IV, III, II  
 C. IV, I, II, III  
 D. IV, I, III, II

- 6 Simplify:  $(2x^3)^3 \cdot 3x^4$

- A.  $24x^{36}$   
 B.  $24x^{13}$   
 C.  $18x^{36}$   
 D.  $6x^{13}$

CALCULATOR PERMITTED

- 7 Simplify:  $(3a^2)^3 (4a^3)^0$

- A.  $9a^6$   
 B.  $27a^6$   
 C.  $36a^8$   
 D.  $108a^9$

8 Simplify:  $\left(\frac{25x^a}{125x^3}\right)^3$

A.  $\frac{x^{3a-9}}{125}$

B.  $\frac{x^{a-3}}{5}$

C.  $125x^{3a-9}$

D.  $\frac{x^{27a}}{5}$

9 Which pattern could be used to predict  $3^{-4}$ ?

A.

$3^3$	27
$3^2$	9
$3^1$	3
$3^0$	1
$3^{-1}$	$\frac{1}{3}$
$3^{-2}$	$\frac{1}{9}$
$3^{-3}$	$\frac{1}{27}$

B.

$3^3$	9
$3^2$	6
$3^1$	3
$3^0$	0
$3^{-1}$	$-\frac{1}{3}$
$3^{-2}$	$-\frac{1}{6}$
$3^{-3}$	$-\frac{1}{9}$

C.

$3^3$	27
$3^2$	9
$3^1$	3
$3^0$	1
$3^{-1}$	-3
$3^{-2}$	-9
$3^{-3}$	-27

D.

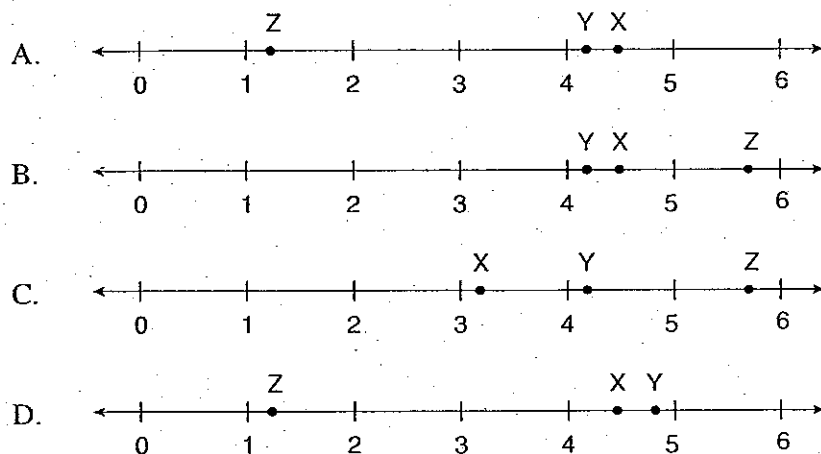
$3^3$	9
$3^2$	6
$3^1$	3
$3^0$	0
$3^{-1}$	-3
$3^{-2}$	-6
$3^{-3}$	-9

10. Which of the following number lines best represents the placement of X, Y, Z, given:

$$X = 2\sqrt{5}$$

$$Y = \text{cube root of } 68$$

$$Z = \sqrt[4]{2}$$



11. Chantal made a mistake in her simplification of  $\frac{(3a^5)^{-2}}{a^4}$ .

Steps	
I.	$\frac{1}{(3a^5)^2(a^4)}$
II.	$\frac{1}{(3)^2(a^5)^2(a^4)}$
III.	$\frac{1}{(9)(a^7)(a^4)}$
IV.	$\frac{1}{9a^{28}}$

Which step contains her first mistake?

- A. Step I  
 B. Step II  
 C. Step III  
 D. Step IV

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A research assistant calculated the brain mass,  $b$ , of an 8 kg cat. She used the formula

$$b = 0.01m^{\frac{2}{3}}, \text{ where } m \text{ is the total mass of the cat.}$$

Steps	
I.	$b = 0.01\sqrt[3]{8^2}$
II.	$b = 0.01\sqrt[3]{16}$
III.	$b \approx 0.01(2.52)$
IV.	$b \approx 0.025$

In which step did the research assistant first make a mistake?

- A. Step I
- B. Step II
- C. Step III
- D. Step IV

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Which one of the following sets of numbers contains only rational numbers?

A.  $\left\{-\frac{3}{4}, 7.1, \sqrt{16}\right\}$

B.  $\left\{\frac{1}{2}, -6, \frac{\sqrt{5}}{2}\right\}$

C.  $\{-3, 4.\overline{23}, 4.121314\dots\}$

D.  $\{\sqrt{10}, 3\sqrt{9}, \pi\}$

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Simplify:  $\sqrt{x^3} \div \sqrt[3]{x^4}$

A.  $\sqrt[6]{x}$

B.  $\sqrt[8]{x^9}$

C.  $\sqrt[9]{x^8}$

D.  $\sqrt[12]{x}$



