

Name: _____

Date: _____

Block: _____

FOM 10 – Chapter 1 PRACTICE Test***

/26

Each question is written response (except #2). **Show all of your work.**

1) Are the following statements true or false: (0.5 marks each)

a) All natural numbers are integers: _____

b) All rational numbers are whole numbers: _____

2) To which set of numbers does $\sqrt[3]{-64}$ belong? (circle BEST answer for 1 mark)

a) Integer and Rational b) Irrational c) Whole, Integer, and Rational d) Rational

3) Find the Greatest Common Factor (GCF) and Least Common Multiple (LCM) of the following numbers: **36 and 28**

GCF: _____ (1 mark)

LCM: _____ (1mark)

4) Determine the following CUBE ROOT using the **grouping method:** (2 marks)

(*marks ONLY if the **grouping method** shown)

$$\sqrt[3]{91125}$$

** use Calculator to help factor!

$$\sqrt[3]{91125} = \underline{\hspace{2cm}}$$

Name: _____

Date: _____

Block: _____

5) Write each radical in SIMPLEST Form, as a mixed radical: (1 mark each)

a) $\sqrt{63}$

b) $\sqrt[3]{40}$

c) $\sqrt{200}$

d) $3\sqrt[3]{81}$

6) Write each radical as an ENTIRE radical: (1 mark each)

a) $5\sqrt{5}$

b) $3\sqrt[3]{2}$

7) A square has an area of 150cm^2 . Find the side length as a radical in simplest form.
(1 mark)

8) Write the following as a radical: (1 mark)

$$x^{\frac{7}{4}}$$

9) Write the following as a power (exponent form): (1 mark)

$$(\sqrt[5]{2})^3$$

Name: _____

Date: _____

Block: _____

10) Evaluate the following: (2 marks each)

a) 2^{-5}

b) $(-125)^{-\frac{1}{3}}$

11) Simplify. Answer must only have positive exponents. (2 marks each)

a) $\frac{4p^7q^{-9}}{12pq^2}$

b) $\left(\frac{64x^2y^9}{4x^8y^{-4}}\right)^{-2}$

12) Simplify. Answer must only have positive exponents. (3 marks)

$$\left(\frac{32x^7y^{\frac{-3}{4}}}{8x^{-7}y^{\frac{5}{4}}}\right)^{\frac{1}{2}}$$

BONUS QUESTION ON THE BACK!

Name: _____

Date: _____

Block: _____

BONUS (for 1 BONUS mark)

What is the side length of the *smallest* **SQUARE WALL** that could be tiled with rectangular tiles that measure 24 cm by 42 cm, without cutting any of the tiles?

Name: _____

Date: _____

Block: _____

FOM 10 – Chapter 1 PRACTICE Test***

Each question is written response (except #2). **Show all of your work.**

1) Are the following statements true or false: (0.5 marks each)

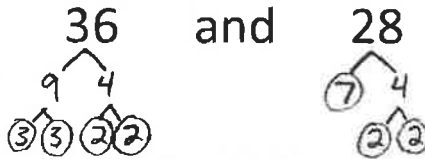
- a) All natural numbers are integers:
 b) All rational numbers are whole numbers:

T
F 0.7 is rational,
 but NOT whole!

2) To which set of numbers does $\sqrt[3]{-64}$ belong? (circle BEST answer for 1 mark)

- $= -4$
 a) Integer and Rational yes = yes
 b) Irrational
 c) Whole, Integer, and Rational
 d) Rational yes

3) Find the Greatest Common Factor (GCF) and Least Common Multiple (LCM) of the following numbers:



$36 = 2 \cdot 2 \cdot 3 \cdot 3$
 $36 = 2^2 \cdot 3^2$
 $28 = 2 \cdot 2 \cdot 7$
 $28 = 2^2 \cdot 7$

GCF: $2 \cdot 2 = 4$ (1 mark)

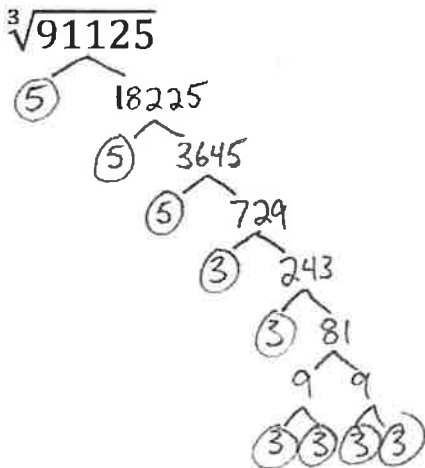
LCM: $2^2 \cdot 3^2 \cdot 7 = 4 \cdot 9 \cdot 7$ (1 mark)

LCM = 252

4) Determine the following CUBE ROOT using the grouping method: (2 marks)

(*marks ONLY if the grouping method shown)

** use Calculator to help factor!



$91125 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 5 \cdot 5 \cdot 5$
 $91125 = (3 \cdot 3 \cdot 5) (3 \cdot 3 \cdot 5) (3 \cdot 3 \cdot 5)$
 $91125 = (45)(45)(45)$

← attempt to make 3 identical groups, since index is 3!

So...

$\sqrt[3]{91125} = 45$

Name: _____

Date: _____

Block: _____

5) Write each radical in SIMPLEST Form, as a mixed radical: (1 mark each)

$$\begin{aligned} \text{a) } \sqrt{63} &= \sqrt{9 \times 7} \\ &= \sqrt{9} \times \sqrt{7} \\ &= 3\sqrt{7} \end{aligned}$$

$$\begin{aligned} \text{b) } \sqrt[3]{40} &= \sqrt[3]{8 \times 5} \\ &= \sqrt[3]{8} \times \sqrt[3]{5} \\ &= 2\sqrt[3]{5} \end{aligned}$$

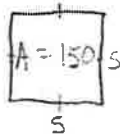
$$\begin{aligned} \text{c) } \sqrt{200} &= \sqrt{100 \times 2} \\ &= \sqrt{100} \times \sqrt{2} \\ &= 10\sqrt{2} \end{aligned}$$

$$\begin{aligned} \text{d) } 3\sqrt[3]{81} &= 3\sqrt[3]{27 \times 3} \\ &= 3\sqrt[3]{27} \times \sqrt[3]{3} \\ &= 3 \cdot 3 \cdot \sqrt[3]{3} \\ &= 9\sqrt[3]{3} \end{aligned}$$

6) Write each radical as an ENTIRE radical: (1 mark each)

$$\begin{aligned} \text{a) } 5\sqrt{5} &= \sqrt{25} \sqrt{5} \\ &= \sqrt{25 \times 5} \\ &= \sqrt{125} \end{aligned}$$

$$\begin{aligned} \text{b) } 3\sqrt[3]{2} &= \sqrt[3]{27} \sqrt[3]{2} \\ &= \sqrt[3]{27 \cdot 2} \\ &= \sqrt[3]{54} \end{aligned}$$

7) A square has an area of 150cm^2 . Find the side length as a radical in simplest form. (1 mark)

$$A = s \times s$$

$$150 = s^2$$

$$s^2 = 150$$

$$s = \sqrt{150}$$

$$s = \sqrt{25 \times 6} = \sqrt{25} \times \sqrt{6} = 5\sqrt{6} \text{ cm}$$

side length =

8) Write the following as a radical: (1 mark)

$$x^{\frac{7}{4}} = \sqrt[4]{x^7}$$

flower power!

9) Write the following as a power (exponent form): (1 mark)

$$(\sqrt[5]{2})^3 = 2^{\frac{3}{5}}$$

flower power!

Name: _____

Date: _____

Block: _____

10) Evaluate the following: (2 marks each)

$$a) 2^{-5} = \frac{1}{2^5} = \boxed{\frac{1}{32}}$$

$$b) (-125)^{-\frac{1}{3}} = \frac{1}{(-125)^{\frac{1}{3}}} = \frac{1}{\sqrt[3]{-125}} = \frac{1}{-5} = \boxed{-\frac{1}{5}}$$

11) Simplify. Answer must only have positive exponents. (2 marks each)

$$a) \frac{4p^7q^{-9}}{12pq^2} = \frac{p^7}{3pq^2q} = \boxed{\frac{p^6}{3q^3}}$$

$$b) \frac{(64x^2y^9)^{-2}}{(4x^8y^{-4})^{-2}} = \left(\frac{16x^2y^9}{x^8y^{-4}}\right)^{-2} = \left(\frac{16y^{13}}{x^6}\right)^{-2} = \left(\frac{x^6}{16y^{13}}\right)^2 = \boxed{\frac{x^{12}}{256y^{26}}}$$

12) Simplify. Answer must only have positive exponents. (3 marks)

$$\left(\frac{32x^7y^{\frac{-3}{4}}}{8x^{-7}y^{\frac{5}{4}}}\right)^{\frac{1}{2}} = \left(\frac{4x^7x^7}{y^{\frac{5}{4}}y^{\frac{3}{4}}}\right)^{\frac{1}{2}} = \left(\frac{4x^{14}}{y^{\frac{8}{4}}}\right)^{\frac{1}{2}} = \left(\frac{4x^{14}}{y^2}\right)^{\frac{1}{2}} = \frac{4^{\frac{1}{2}}(x^{14})^{\frac{1}{2}}}{(y^2)^{\frac{1}{2}}} = \frac{2x^7}{y} = \boxed{\frac{2x^7}{y}}$$

BONUS QUESTION ON THE BACK!

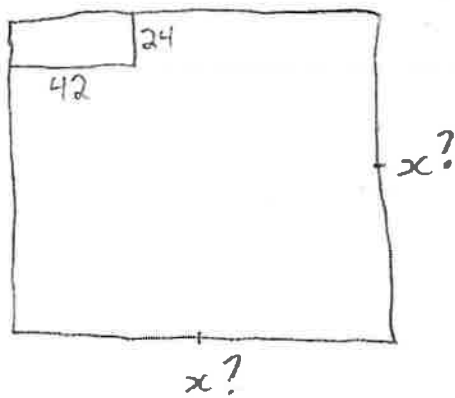
Name: _____

Date: _____

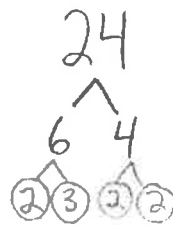
Block: _____

BONUS (for 1 BONUS mark)

What is the side length of the *smallest* **SQUARE WALL** that could be tiled with rectangular tiles that measure 24 cm by 42 cm, without cutting any of the tiles?



answer (x) will be bigger than #'s,
so L.C.M.!



$$24 = 2 \cdot 2 \cdot 2 \cdot 3$$

$$24 = \underline{2^3} \cdot 3^1$$

$$42 = 2^1 \cdot \underline{3^1} \cdot \underline{7^1}$$

$$\text{LCM} = 2^3 \cdot 3^1 \cdot 7^1$$

$$= 8 \cdot 3 \cdot 7$$

$$\text{LCM} = 168$$

highest power
of any prime on
either list!

So, the side length of smallest square
wall is 168cm