



Subject: Mathematics

Second Exam / Remedial Plan

Name: Answers

Grade-Section: 8 CS

Date:

Teacher: Zain Hattar

Objective: Revise irrational numbers, estimating square roots and cube roots, index laws, multiplying and dividing a number by a power of 10, standard form, lower and upper bounds.

Question 1

- Estimate the following square root to 1 d.p. Show all the steps of your working.

$$\begin{array}{ccc} \sqrt{49} & \sqrt{62} & \sqrt{64} \\ 7 & & 8 \end{array}$$

$$62 - 49 = 13$$

$$64 - 49 = 15$$

$$\frac{13}{15} \approx 0.9 \rightarrow 7 + 0.9 = 7.9$$

$$\sqrt{62} \approx 7.9$$

- Estimate the following cube root to 1 d.p. Show all the steps of your working.

$$\begin{array}{ccc} \sqrt[3]{125} & \sqrt[3]{200} & \sqrt[3]{216} \\ 5 & & 6 \end{array}$$

$$200 - 125 = 75$$

$$216 - 125 = 91$$

$$\frac{75}{91} \approx 0.8 \rightarrow 5 + 0.8 = 5.8$$

$$\sqrt[3]{200} \approx 5.8$$

Question 2

Sort the following numbers into one of these three groups.

Put a tick (✓) in the correct box.

Number	Rational	Irrational	Not rational or irrational
- 154	✓		
$-\sqrt{25}$	✓		
0.48	✓		
$\sqrt[3]{-27}$	✓		
2π		✓	
$\sqrt[3]{216}$	✓		
$\sqrt{-80}$			✓
$\frac{28}{3}$	✓		

Question 3

Simplify using index laws. Show all the steps of your working and leave your answer in positive index form.

$$\text{a) } 3^{20} \times 3^5 = 3^{20+5} = 3^{25}$$

$$\text{b) } 2^{19} \div 2^5 = 2^{19-5} = 2^{14}$$

$$\text{c) } 7^4 \div 7^{-3} = 7^{4-(-3)} = 7^{4+3} = 7^7$$

$$\text{d) } 19^8 \times 19^{-8} = 19^{8+(-8)} = 19^0 = 1$$

$$\text{e) } \left(-\frac{1}{6}\right)^0 = 1$$

$$f) \frac{(2 \times 2^4)^2}{2^{15}} = \frac{(2^5)^2}{2^{15}} = \frac{2^{10}}{2^{15}} = 2^{-5} = \frac{1}{2^5}$$

$$g) \frac{(3^5 \times 3^3)^2}{(3^{10} \div 3^2)} = \frac{(3^8)^2}{3^8} = \frac{3^{16}}{3^8} = 3^8$$

Question 4

Fill in the boxes:

a) $\times 10^2 = 54$

b) $4478 \div$ $= 0.4478$

c) $\times 10^{-4} = 84$

d) $0.054 \times$ $= 540$

e) $100 \times 10^{-1} + 0.6 \div 10^{-2} =$

Question 5

Write in standard form:

a) $2300 = 2.3 \times 10^3$

b) $0.0041 = 4.1 \times 10^{-3}$

c) $789\,000 = 7.89 \times 10^5$

d) $0.005 = 5 \times 10^{-3}$

Question 6

Write an inequality to show the upper and lower bounds for a number, n , where n is:

a) 13.45 rounded correct to the nearest 2 d.p.

$$0.01 \div 2 = 0.005$$

$$13.45 - 0.005 = 13.445$$

$$13.45 + 0.005 = 13.455$$

$$\boxed{13.445} \leq n < \boxed{13.455}$$

b) 300 rounded correct to the nearest 1 s.f.

$$100 \div 2 = 50$$

$$300 - 50 = 250$$

$$300 + 50 = 350$$

$$\boxed{250} \leq n < \boxed{350}$$

NEVER
NEVER
NEVER
NEVER
GIVE
UP