Name: KEY

Unit 1 Review Sheet

Section 1: Fraction to Decimal

Convert each fraction into a decimal. Show all work.

12 24 36
48 60 72
84 96 108

1) $\frac{23}{4}$

$\frac{23}{4} = 5\frac{3}{4} = \boxed{5.75}$

2) $\frac{11}{12}$

$0.91\overline{6}$
12)11.000
108
20
12
80
72
8

$\boxed{0.91\overline{6}}$

3) $\frac{1}{7}$

0.142857
7)1.000000
7
30
28
20
14
60
56
40
35
50
49
1

$\boxed{0.\overline{142857}}$

Section 2: Decimal to Fraction

Convert each decimal into a fraction. Simplify if possible.

4) 4.1

$\boxed{4\frac{1}{10}}$

5) $4.\overline{1}$

$\boxed{4\frac{1}{9}}$

6) 4.12

$4\frac{12 \div 4}{100 \div 4} \rightarrow \boxed{4\frac{3}{25}}$

7) $4.\overline{12}$

$4\frac{12 \div 3}{99 \div 3} \rightarrow \boxed{4\frac{4}{33}}$

8) $4.\overline{123456}$

$\boxed{4\frac{123456}{999999}}$ ÷3 OR ÷3 $\boxed{4\frac{41152}{333333}}$

Section 3: Exact Roots

Find each root. Show your work for each one. (Don't erase your "guesses" that don't work!)

9) $\sqrt{400}$

$\boxed{20}$

20
20
00
400
400

10) $\sqrt[3]{-216}$

$\boxed{-6}$

$-6 \cdot -6 \cdot -6 = -216$

11) $\sqrt{\frac{81}{64}}$

$\boxed{\frac{9}{8}}$

12) $\sqrt{-324}$

$\boxed{\text{Undefined}}$

13) $\sqrt[4]{81}$

$\boxed{3}$

$3 \cdot 3 \cdot 3 \cdot 3$
9 9
81

Section 4: Estimating Roots

For 14 – 16, all answers in a reasonable range will be accepted.

14) $\sqrt{40} \approx 6.3$

(Accept 6.1, 6.2, 6.3, 6.4)

$\sqrt{36} = 6$ 40 is closer to 36

$\sqrt{49} = 7$

15) $\sqrt{117} \approx 10.8$

(Accept 10.6, 10.7, 10.8, 10.9)

$\sqrt{100} = 10$ 117 is closer to 121

$\sqrt{121} = 11$

16) $\sqrt[3]{32} \approx 3.2$

(Accept 3.1, 3.2, 3.3, 3.4)

$\sqrt[3]{27} = 3$ 32 is much closer to 27

$\sqrt[3]{64} = 4$

For 17 and 18, you must be accurate to the nearest tenth. Multiply out your estimates to see which is the closest.

17) $\sqrt{34}$ little bit under 6

5.8
× 5.8
464
2900
33.64

5.9
× 5.9
531
2950
34.81

$\boxed{\approx 5.8}$

34.00
−33.64
0.36 difference

34.81
−34.00
0.81 difference

CLOSER

18) $\sqrt{102}$ little bit over 10

10.1
× 10.1
101
0000
10100
102.01

10.0
× 10.0
100

$\boxed{\approx 10.1}$

Way Closer

Section 5: Solving equations with exponents

Solve each equation. (That means find all possible solutions!)

19) $x^3 = 125$

$\boxed{x=5}$

20) $x^2 = -4$

$\boxed{\text{No Solution}}$

Nothing x itself = negative

21) $x^3 = -1000$

$-10 \cdot -10 \cdot -10 = -1000$

$\boxed{x=-10}$

22) $x^2 = 121$

$\boxed{x=11, -11}$

*2 answers!

Section 6: Rational or Irrational

For each problem, state whether it is rational or irrational, and explain why.

23) $0.\overline{81}$

$\boxed{\text{Rational}}$; all repeating decimals can be turned into fractions $\left(\frac{81}{99}\right)$

24) $\sqrt{14}$

$\boxed{\text{Irrational}}$; non-exact roots are always never-ending decimals

25) 1.7865

$\boxed{\text{Rational}}$; this is a terminating decimal and can be turned into a fraction. $\left(1\frac{7865}{10000}\right)$

26) $\frac{18}{17}$

$\boxed{\text{Rational}}$; it's already a fraction!

27) $\sqrt[3]{\frac{16}{2}}$

$\sqrt[3]{\frac{16}{2}} \rightarrow \sqrt[3]{8} = 2$

$\boxed{\text{Rational}}$; it comes out exact.

28) 1.405060708 ...

$\boxed{\text{Irrational}}$; this decimal goes on forever without repeating.

Section 7: Comparing Values

29) Put these values in order from least to greatest. Then explain, in words, how you put them in order. You must mention each of the six values in your explanation.

$3.14 \times 2 = 6.28$

A: $\frac{17}{4}$ → $4\frac{1}{4} = 4.25$

B: 3.3 → 3.3

C: $\sqrt{23}$ → ≈ 4.8

D: $3\frac{1}{3}$ → $3.333...$

E: $\sqrt[3]{20}$ → ≈ 2.7ish

F: 2π → ≈ 6.28

E, B, D, A, C, F

Example of a good paragraph

Since $\sqrt[3]{27} = 3$, (E) $\sqrt[3]{20}$ is less than 3, so it's first. B and D are both in the 3's, but $3\frac{1}{3} = 3.\overline{3}$ which is greater than 3.3. A and C are both in the 4's, but $\frac{17}{4} = 4.25$, and $\sqrt{23}$ must be a high decimal because 23 is closer to 25 than 16. F is the highest because π is about 3.14, and $3.14 \times 2 = 6.28$.

Now Go to LISCHWE.WEEBLY.COM AND USE THE ANSWER KEY TO CHECK YOUR ANSWERS IN A DIFFERENT COLOR! IF YOU REWORK THE ONES YOU GOT WRONG + FIX YOUR MISTAKES, YOU WILL GET TO COUNT THEM AS CORRECT WHEN WE WRITE A SCORE. THIS IS NOT OPTIONAL - YOU MUST DO THIS STEP! *