1. Write each number as a product of its prime factors.

a) 10   **2 x 5**   b) 45   **5 x 3 x 3**   c) 522

                                                                2 x 3^2 x 29

2a) Find the LCM of 2 and 9.   b) Find the LCM of 28, 42 and 63.

         LCM = 18   **LCM = 252**

3a) Find the GCF of 18 and 36.   b) Find the GCF of 120 and 90.

          GCF = 18   **GCF = 30**

4. Hot dog wieners come in packages of 10 and hot dog buns come in packages of 12.
    How many packages of each do you need to buy to have the same amount of each?
   Do you use GCF or LCM? Show workings.

            **LCM.   Buy 6 packages of hot dog wieners and 5 packages
            of buns to have 60 of each.**

5. There are 16 male students and 20 female students in a grade 10 math class. The
    teacher wants to divide the class into groups with the same number of males and
    same number of females in each group. What is the greatest number of groups the
    teacher can make?   Do you use GCF or LCM? Show workings.

            **GCF. The teacher can make 4 groups. Each group will have
            4 male students and 5 female.**

6. Label the following correctly.

radical

$$\sqrt[n]{m}$$

index
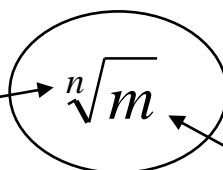
radicand

7. Determine $\sqrt[4]{256}$ **= 4**

8a) Determine the square root of 484.   b) Determine the cube root of 512.

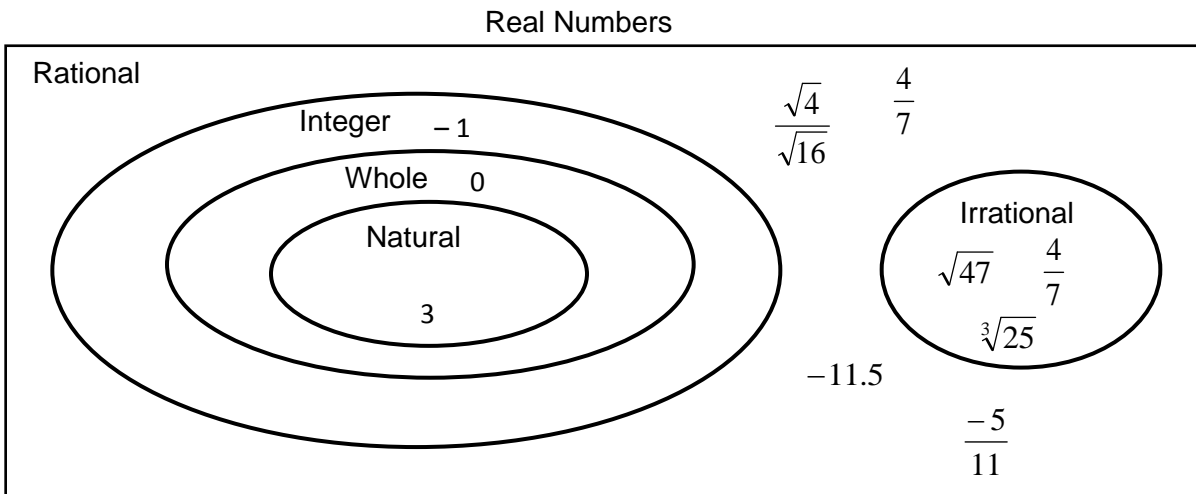$$\sqrt{484} = 22$$ $$\sqrt[3]{512} = 8$$

9. A cube has a volume of 2197 m^3.   Its surface area is to be painted. Each can of
    paint covers about 40 m^2.   How many cans of paint are needed? Show workings.

                26 cans of paint are needed.

10. Put the following numbers in the correct place in the Venn Diagram.

$$-1, \quad 0, \quad 3, \quad \sqrt{47}, \quad \frac{4}{7}, \quad \pi, \quad -11.5, \quad \frac{\sqrt{4}}{\sqrt{16}}, \quad \frac{-5}{11}, \quad \sqrt[3]{25}$$

Real Numbers

Rational

Integer − 1

$\frac{\sqrt{4}}{\sqrt{16}}$ $\frac{4}{7}$

Whole 0

Natural

Irrational

$\sqrt{47}$ $\frac{4}{7}$

3

$\sqrt[3]{25}$

-11.5

$\dfrac{-5}{11}$

11. Order the following irrational numbers from least to greatest.

$$\sqrt[3]{30}, \quad \sqrt{17}, \quad \sqrt[4]{90}, \quad \sqrt{50}, \quad \sqrt[3]{-7}$$

$$\sqrt[3]{-7}, \quad \sqrt[4]{90}, \quad \sqrt[3]{30}, \quad \sqrt{17}, \quad \sqrt{50}$$

12. Write each radical in simplest mixed radical form.

a) $\sqrt{45}$

$3\sqrt{5}$

b) $\sqrt[3]{80}$

$2\sqrt[3]{10}$

c) $\sqrt[3]{96}$

$2\sqrt[3]{12}$

13. Rewrite each mixed radical as an entire radical.

a) $3\sqrt{7}$

$\sqrt{63}$

b) $2\sqrt[3]{4}$

$\sqrt[3]{32}$

c) $6\sqrt{11}$

$\sqrt{396}$

14. Express each power as a radical.   a) $12^{\frac{1}{4}}$ b) $(-50)^{\frac{5}{3}}$

$\sqrt[4]{12}$

$\sqrt[3]{(-50)^5}$

15. Express each radical as a power.   a) $\sqrt{1.4}$ b) $\sqrt[3]{13^2}$

$1.4^{\frac{1}{2}}$

$13^{\frac{2}{3}}$

18. Evaluate each power, without using a calculator. Write as a radical first!

a) $16^{0.25}$

b) $1.44^{\frac{1}{2}}$

c) $(-8)^{\frac{5}{3}}$

d) $\left(\dfrac{9}{16}\right)^{\frac{3}{2}}$

2

1.2

-32

$\dfrac{27}{64}$