Homework Check – Dimensional Analysis Word Problems Name _____

Show all work using dimensional analysis.

1. The maximum recommended single adult dose of Acetaminophen, a drug used to treat pain, is 15 mg/kg of body mass. Calculate the dose in milligrams for a 150 lb person. (1 lb ≅ 454 g)

$$\frac{150\ lb}{}\left|\frac{454\ g}{1\ lb}\right|\frac{1\ kg}{1000\ g}\left|\frac{15\ mg}{1\ kg}\right| = 1021.5\ mg$$

2. Acetaminophen's pain relief lasts approximately 4 hours. If one extra strength capsule contains 500 mg, what is the maximum number of capsules this person can take per day?

$$\frac{1021.5\ mg}{}\left|\frac{1\ capsule}{500\ mg}\right| = 2.042\ capsules \approx 2\ capsules\ every\ 4\ hours$$

$$\frac{24\ hours}{1\ day}\left|\frac{2\ capsules}{4\ hours}\right| = 12\ capsules\ per\ day$$

3. During the first 30 minutes of a fishing trip you catch 6 fish. If you continue catching fish at that rate, how many hours would you have to fish in order to catch 37 fish?

$$\frac{37\ fish}{}\left|\frac{30\ min}{6\ fish}\right|\frac{1\ hour}{60\ min}\left| = 3.08\ hours\right.$$

4. Convert 625 mg into kg. Show work.

$$\frac{625\ mg}{}\left|\frac{1\ g}{1000\ mg}\right|\frac{1\ kg}{1000\ g}\left| = 6.25 \times 10^{-4}\ kg\right.$$

5. Covert 0.025 Liters into ml. Show work.

$$\frac{0.025\ L}{}\left|\frac{1000\ ml}{1\ L}\right| = 25\ ml$$

Homework Check – Dimensional Analysis Word Problems Name _____

Show all work using dimensional analysis.

1. The recommended adult dose of Ibuprofen, a drug used to treat pain, is approximately 8.8 mg/kg of body mass. Calculate the dose in milligrams for a 185 lb person. (1 lb ≅ 454 g)

$$\frac{185\ lb}{}\left|\frac{454\ g}{1\ lb}\right|\frac{1\ kg}{1000\ g}\left|\frac{8.8\ mg}{1\ kg}\right| = 739\ mg$$

2. The pain relief of Ibuprofen lasts about 4 – 6 hours. If one Ibuprofen capsule contains 200 mg, what is the maximum amount of capsules this person can take in a day?

$$\frac{739\ mg}{}\left|\frac{1\ capsule}{200\ mg}\right| = 3.695\ capsules \approx 4\ capsules\ every\ 4-6\ hours$$

$$\frac{24\ hours}{1\ day}\left|\frac{4\ capsules}{4\ hours}\right| = 24\ capsules\ per\ day \qquad \frac{24\ hours}{1\ day}\left|\frac{4\ capsules}{6\ hours}\right| = 16\ capsules\ per\ day$$

3. During the first 20 minutes of a fishing trip you catch 5 fish. If you continue catching fish at that rate, how many hours would you have to fish in order to catch 18 fish?

$$\frac{18\ fish}{}\left|\frac{20\ min}{5\ fish}\right|\frac{1\ hour}{60\ min}\left| = 1.2\ hours\right.$$

4. Convert 750 km into mm. Show work.

$$\frac{750\ km}{}\left|\frac{1000\ m}{1\ km}\right|\frac{1000\ mm}{1\ m}\left| = 7.5 \times 10^{8}\ mm\right.$$

5. Covert 0.135 kg into g. Show work.

$$\frac{0.135\ kg}{}\left|\frac{1000\ g}{1\ kg}\right| = 135\ g$$