**Simplifying Complex Fractions and Ratios**

**1) Simplifying complex fractions**: simplify the following by factorization.

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| --- | --- |
| $$\frac{9x}{y^{}}×\frac{y^{}}{3z}$$ | $$\frac{3a^{}}{b^{}}×\frac{b}{12c^{}}×\frac{6c}{d}$$ |

**2) Simplifying complex ratios:** You can make new ratios from other ratios by treating them as complex fractions and simplifying them.

A. You will need 2 small index cards for this problem.

1. Write the 2 fraction style ratios for this information: There are 16 ounces in 1 pound.
2. Write ONE of them on the front of ONE of the index cards.
3. Write the other ratio on the back of THAT same index card.
4. Write the 2 fraction style ratios for this information: There are 2.2046 pounds in 1 kilogram.
5. Write ONE of them on the front of ONE of the index cards.
6. Write the other ratio on the back of THAT same index card.
7. Arrange the cards so that you can simplify and create one fraction style ratio showing ounces per kilogram.
8. Write the simplified ounces per kilogram ratio on your paper.
9. Write the reciprocal of step h).

B**.** You will need 2 small index cards for this problem.

1. Write the 2 fraction style ratios for this information: There are 1000 mL in 1 Liter.
2. Write ONE of them on the front of ONE of the index cards.
3. Write the other ratio on the back of THAT same index card.
4. Write the 2 fraction style ratios for this information: There are 3.7854 Liters in 1 gallon.
5. Write ONE of them on the front of ONE of the index cards.
6. Write the other ratio on the back of THAT same index card.
7. Arrange the cards so that you can simplify and create one fraction style ratio showing milliliters per gallon.
8. Write the simplified milliliters per gallon ratio on your paper.
9. Write the reciprocal of step h).

C. You will need 3 small index cards for this problem.

1. Write the 2 fraction style ratios for this information: There are 5280 feet in 1 mile.
2. Write ONE of them on the front of ONE of the index cards.
3. Write the other ratio on the back of THAT same index card.
4. Write the 2 fraction style ratios for this information: There are 12 inches in 1 foot.
5. Write ONE of them on the front of ONE of the index cards.
6. Write the other ratio on the back of THAT same index card.
7. Write the 2 fraction style ratios for this information: 0.62137 miles is equal to 1 km.
8. Write ONE of them on the front of ONE of the index cards.
9. Write the other ratio on the back of THAT same index card.
10. Arrange the cards so that you can simplify and create one fraction style ratio showing inches per kilometer.
11. Write the simplified inches per kilometer ratio on your paper.
12. Write the reciprocal of step k).

D. Attempt this problem without using note cards.

1. Write the 2 fraction style ratios for this information: The current exchange rate is $1.00 to £0.6459.
2. Write the 2 fraction style ratios for this information: According to reliable sources, 1 Galleon is equivalent to £5.
3. Write the 2 fraction style ratios for this information: According to Rubeus Hagrid, 1 Galleon is equivalent to 17 sickles.
4. Arrange the fractions so that you can simplify and create one fraction style ratio showing sickles per US dollar.
5. Write the simplified sickles per USD ratio on your paper.
6. Write the reciprocal of step e).