

Prerequisite Math Practice Test for LPN and RN Program:

Basic Operations on Integers: *Follow Order of Operations; P.E.M.D.A.S*

- Evaluate: $2(4-6) + 3 = 2(-2) + 3 = -4 + 3 = (-1)$
- Evaluate: $(6-12) + (15 + (4-20)) = -6 + (15 + (-16)) = -6 + (-1) = (-7)$
- Evaluate: $4(6 \div 2) - 3 + 5 = 4(3) - 3 + 5 = 12 - 3 + 5 = 18$
- Evaluate: $((12-7))^2 \div 5 - 2 = (5)^2 \div 5 - 2 = 25 \div 5 - 2 = 5 - 2 = 3$

Basic Operations on Fractions:

- Evaluate: $\frac{2 \cdot 5}{2 \cdot 4} + \frac{9}{8} = \frac{10}{8} + \frac{9}{8} = \frac{19}{8}$
- Evaluate: $\frac{5 \cdot 2}{5 \cdot 7} - \frac{3 \cdot 7}{5 \cdot 7} = \frac{10}{35} - \frac{21}{35} = \frac{-11}{35}$
- Evaluate: $\frac{5}{9} \cdot \frac{3}{10} = \frac{5 \cdot 3}{9 \cdot 10} = \frac{15}{90} = \frac{1}{6}$ *OR* cross reduce $\frac{5}{9} \cdot \frac{3}{10} = \frac{1}{6}$
multiply across then reduce
- Evaluate: $\frac{11}{15} \div \frac{22}{3} = \frac{11}{15} \cdot \frac{3}{22} = \frac{1}{10}$
To divide, multiply by the reciprocal
- Evaluate: $\frac{4}{5}(\frac{2 \cdot 7}{3 \cdot 2} - \frac{7}{6}) + (\frac{1}{2} \div \frac{5}{8}) = \frac{4}{5}(\frac{14}{6} - \frac{7}{6}) + (\frac{1}{2} \cdot \frac{8}{5}) = \frac{4}{5}(\frac{7}{6}) + (\frac{4}{5}) = \frac{28}{30} + \frac{4}{5} = \frac{28}{30} + \frac{24}{30} = \frac{52}{30} = \frac{26}{15}$
Follow order of operations

Ratios:

10. A pattern has 3 blue triangles to every 18 yellow triangles. What is the ratio of yellow triangles to blue triangles?

$$\text{Yellow to blue} = 18:3 = \frac{18}{3} = \frac{6}{1} = 6:1$$

11. A bag contains 9 red marbles and 7 blue marbles. What is the ratio of red marbles to the total marbles?

$$\text{red to total} = 9:16 = \frac{9}{16}$$

12. A pattern has 5 blue triangles to every 20 yellow triangles. What is the ratio of yellow triangles to all triangles?

$$\text{Yellow to all} = 20:25 = \frac{20}{25} = \frac{4}{5} = 4:5$$

Convert Between Fractions (Ratios), Decimals and Percents:

13. Write $\frac{4}{5}$ as a decimal and percent

$$.8 = 80\%$$

14. Write 35% as a decimal and a fraction

$$.35 = \frac{35}{100} = \frac{7}{20}$$

15. Write 1.25 as a percent and a fraction

$$125\% = \frac{125}{100} = 1\frac{1}{4} = \frac{5}{4}$$

Comparing Fractions and Decimals: use <, > or = to compare each of the following

16. $\frac{15}{4} > \frac{16}{11}$

multiply the crosses to compare fractions

17. $\frac{6}{5} = \frac{30}{25}$

18. $0.012 < 0.12$

19. $1.201 > 1.015$

Calculations with Percents:

20. What is 25% of 60?

$$.25(60) = 15$$

multiply

21. 45 is what percent of 130?

Set up a proportion $\frac{45}{130} = \frac{x}{100}$ $\frac{4500 = 130x}{130} = \frac{130x}{130}$ $x = 34.6\%$

22. A 40% increase of 30 is how much?

Find 40% of 30 $.4(30) = 12$
then add this to 30 $30 + 12 = 42$

23. A decrease from 70 to 36 is what percent?

Decrease Amount: $70 - 36 = 34$

% Decrease of 70: $\frac{34}{70} = \frac{x}{100}$ $\frac{3400 = 70x}{70} = \frac{70x}{70}$ $x = 48.6\%$

Conversions:

24. Convert 1200 grams to milligrams and micrograms

1 gram = 1000 mg

1 gram = 1,000,000 mcg

$$1200 \text{ g} = 12,000,000 \text{ mg} = 12,000,000,000 \text{ mcg}$$

25. Convert 4 inches to centimeters

1 inch = 2.54 cm

$$4(2.54) = 10.16 \text{ cm}$$

26. Convert 3.2 micrograms to grams

$$3.2 \text{ mcg} = .0000032 \text{ g}$$

27. Convert 62 millimeters to inches

$$\frac{62 \text{ mm}}{10 \text{ mm}} \bigg/ \frac{1 \text{ cm}}{2.54 \text{ cm}} \bigg/ \frac{1 \text{ inch}}{2.54 \text{ cm}} = \frac{62}{25.4} = 2.44 \text{ in}$$

8. Convert 1.38 milliliters to teaspoons

$$1 \text{ tsp} = 5 \text{ mL}$$

$$\frac{1.38 \text{ mL}}{5 \text{ mL}} \times 1 \text{ tsp} = .276 \text{ tsp}$$

9. Convert 3.56 fluid ounces to milliliters

$$\frac{3.56 \text{ fl oz}}{8 \text{ oz}} \times \frac{240 \text{ mL}}{1 \text{ cup}} = \frac{854.4}{8} = 106.8 \text{ mL}$$

30. Convert 4 tablespoons to milliliters

$$\frac{4 \text{ Tbsp}}{1 \text{ Tbsp}} \times \frac{3 \text{ tsp}}{1 \text{ tsp}} \times \frac{5 \text{ mL}}{1 \text{ tsp}} = 60 \text{ mL}$$

31. Convert 75 pounds and 4 ounces to kilograms

$$2.2 \text{ pounds} = 1 \text{ kg} \quad 75 \text{ pound and } 4 \text{ oz} = 75 \frac{4}{16} \text{ pounds} = 75.25 \text{ pounds}$$

$$\frac{75.25}{2.2} = 34.2 \text{ kg}$$

Solving Proportions Word Problems:

32. If there is \$15 in a drawer and the ratio of money in the drawer to money in the piggy bank is 3:5, then how much money is in the piggy bank?

$$\frac{\text{drawer}}{\text{bank}} = \frac{3}{5} = \frac{15}{x} \quad \frac{3x}{3} = \frac{75}{3} \quad x = 25$$

33. You have 10 apples and the ratio of apples to oranges is 5:2, so how many oranges do you have?

$$\frac{\text{apples}}{\text{oranges}} = \frac{5}{2} = \frac{10}{x} \quad 5x = 20 \quad x = 4 \text{ oranges}$$

34. Knowing there are 2.2 pounds in one kilogram, how many kilograms does a person weigh if they are 165 pounds?

$$\frac{\text{pounds}}{\text{kg}} = \frac{2.2}{1} = \frac{165}{x} \quad \frac{2.2x}{2.2} = \frac{165}{2.2} \quad x = 75 \text{ kg}$$

35. Knowing there are 2.2 pounds in one kilogram, how many pounds does a person weigh if they are 62 kilograms?

$$\frac{\text{pounds}}{\text{kg}} = \frac{2.2}{1} = \frac{x}{62} \quad x = 136.4 \text{ pounds}$$

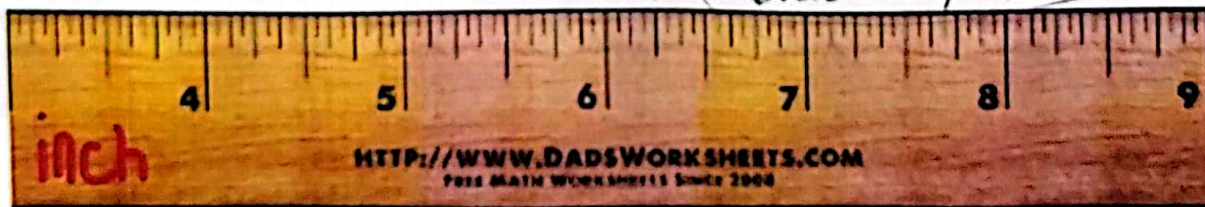
36. Knowing there are 60 drops in a teaspoon, how many teaspoons are 105 drops?

$$\frac{\text{drops}}{\text{tsp}} = \frac{60}{1} = \frac{105}{x} \quad \frac{60x}{60} = \frac{105}{60} \quad x = 1.75 \text{ tsp}$$

Reading a ruler: give the measurements indicated by the pointer



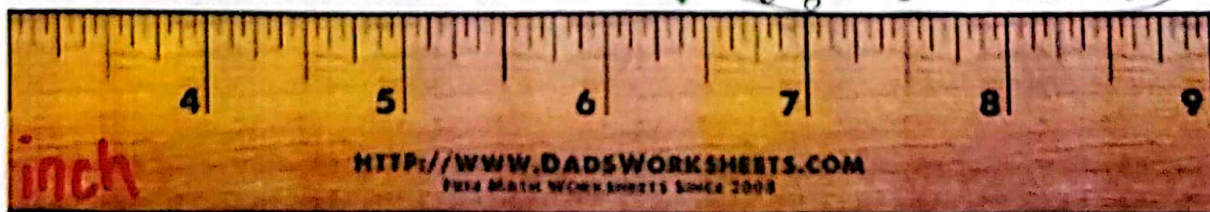
$$6.25 = 6 \frac{1}{4} \text{ inches}$$



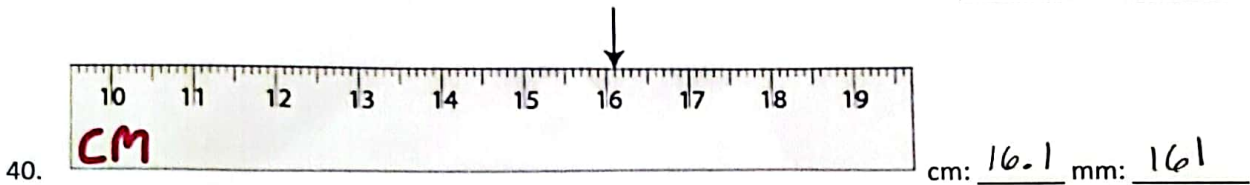
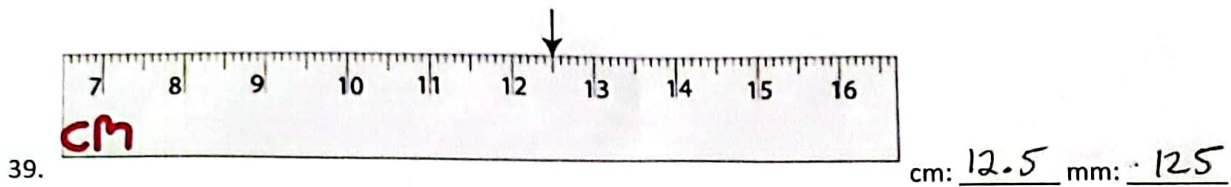
37.



$$6 \frac{3}{8} = 6.375 \text{ inches}$$



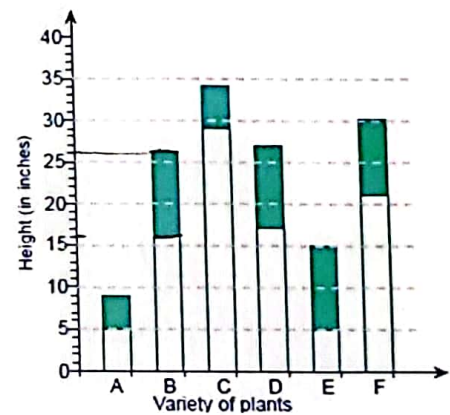
38.



Reading Charts and Graphs:

41. The following vertical bar graph shows the range of heights for each variety of plant. The shaded portion of each bar illustrates the range of heights for the plant.

- Which plant has a minimum height of 16 inches?
Plant B
- What is the maximum height of this plant?
26 inches
- Which plant has the smallest range in height?
Plant A



42. The pie chart shows the amount of money the Johnson family spends each month on their bills.

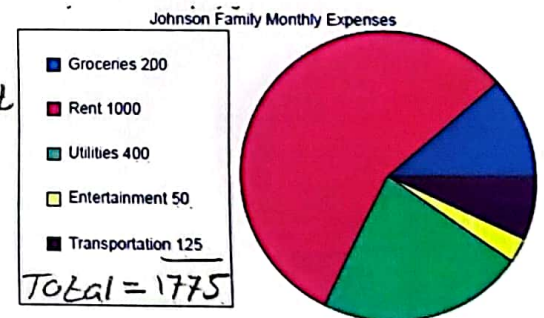
- What expenditure is the largest? Which is smallest?
Rent Entertainment

- What is the ratio of rent to utilities?

$$\frac{\text{rent}}{\text{utilities}} = \frac{1000}{400} = \frac{10}{4} = \frac{5}{2} \quad \text{5:2}$$

- What percent of their monthly expenses are groceries?

$$\frac{200}{1775} = .1126 = 11.3\%$$



Solving: find the value of x that makes the equation true

43. $x + 6 = 10$
 $x = 4$

44. $-5 + x = 12$
 $x = 17$

45. $\frac{4x}{4} = \frac{-8}{4}$
 $x = -2$