Practice Math Test for PTA Program:

Basic s on Integers: Follows Operations ocJee G e OMC
cat;ooS : PE D S

1. Evaluate: $2(4-6)+3 = 2(-2) = -4+3$ Evaluate: +3

$(6-12)+(15+(4-20)) = (-6)+(15+(-16)) = -6+15-16 = -7$

$4-6\div 2\cdot -3+5 = 4-3\cdot -3+5 = 4+9+5 = 18$

$(12-7)^2\div 5-2 = (-5)^2\div 5-2 = 25\div 5-2 = 5-2 = 3$

2. Evaluate:

3. Evaluate:

4. Evaluate: (12

Basic Operations on Fractions:

5. Evaluate: $\frac{2\cdot 5}{2\cdot 4}+\frac{9}{8} = \frac{10}{8}+\frac{9}{8} = \frac{19}{8}$

add and subtract need common denominator

6. Evaluate: $\frac{5\cdot 2}{5\cdot 7}-\frac{3\cdot 7}{5\cdot 7} = \frac{10}{35}-\frac{21}{35} = \frac{-11}{35}$

7. Evaluate: $\frac{1}{3}\cdot\frac{3}{10}\cdot\frac{1}{2} = \frac{1}{6}$

Cross reduce first then multiply $\frac{\text{top}\cdot\text{top}}{\text{bottom}\cdot\text{bottom}}$

Or multiply first: $\frac{5}{9}\cdot\frac{3}{10} = \frac{15}{90} = \frac{15\div 15}{90\div 15}$ then simplify

8. Evaluate: $\frac{11}{15}\div\frac{22}{3} = \frac{1}{5}\frac{11}{15}\cdot\frac{3}{22}_{2}^{1} = \frac{1}{10}$

To divide by a fraction multiply by the reciprocal

9. Evaluate: $\frac{4}{5}\left(\frac{2\cdot 2}{3\cdot 2}\frac{7}{6}\right)+\left(\frac{1}{2}\div\frac{5}{8}\right) = \frac{4}{5}\left(\frac{4}{6}-\frac{7}{6}\right)+\left(\frac{1}{2}\cdot\frac{4}{5}\right) = \frac{2}{5}\left(\frac{-3}{6}\right)+\left(\frac{4}{5}\right) = -\frac{2}{5}+\frac{4}{5} = \frac{2}{5}$

Follows PE M D A S

Ratios:

10. A pattern has 3 blue triangles devery 18 yellow triangles. What is the ratio of yellow trianglestmblue triang[l]es?

Yellow : : b)ve = 18 : 3 $\frac{18}{3} = 6 = 6:1 = 6$ to 1

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

Total = 9+7 = 16 red to total € 9:16

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

All = 5+20 = 25 Yellow to €4'/ 20: 25 $= \frac{20}{25} = \frac{4}{5} = 4:5$

Convert Between Fractions (Ratios), Decimals and Percents:

13. Write —as a decimal and percent

q} 5'0.6 = SOX

14. Write 35% as a decimal and a fraction

=0. 35

15. Write 1.25 as a percent and a fraction

12 g 5

12570 - =

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

16. $\frac{15}{4} > \frac{16}{11}$ 64 15 · 11 = 165 165 > 6 4 · 16 = 64 SO 1 5 (o

17. $\frac{2}{25} = \frac{30}{}$ 6 · 25 = 150 5 · 30 = 150

18. 0.012 < 0.12

19. 1.201 1.015

Calculations with Percents: Of smulti

20. What is 25% of 60?

.25 (co[x])=

21. 45 is what percent of 130? See u p pca portion, cross multiply to solve

. 10005 - / 30 $\frac{30x}{130}$ $x = \frac{100(45)}{130} = 34.62$

100 1 3 d

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

40%04 30 = .4(30) = It, so 30 by IC = 30 q -C

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

70 —36 3 L// 3 q ;S what % Of 70

7

3?d/0ö _ = 48.57%

7-0

Conversions:

12 in = 1 ft

24. Convert 3.5 feet to inches

3.5 (12) = 42 in

ia 9. 5171 cm

rs 4 (2.54) = 10.16 cm

25. Convert 4 inches to centimeters l

(10) = 270 mm

1 cm = 10 mm

26. Convert 27 centimeters to millimeters Q 7

27. Convert 62 millimeters to inches

$\frac{62\text{ mm}}{1}\left|\frac{1\text{ cm}}{10\text{ mm}}\right|\frac{1\text{ in}}{2.54\text{ cm}}$

10 (2.5%)

$\frac{62}{25.4} = 2.44\text{ in}$

$\frac{3}{5} = 0.00138\text{ KL}$

28. Convert 1.38 liters to kiloliters 1 . 38

I 1000 L ! 000

29. Convert 1.5 gallonsto cups

$\frac{1.5\text{ gal}}{1}\left|\frac{4\text{ qts}}{1\text{ gal}}\right|\frac{2\text{ pt}}{1\text{ qt}}\left|\frac{2\text{ cups}}{1\text{ pt}}\right. = 24\text{ cups}$

30. Convert 70 °F to Celsius

C 4(É-32) $= \frac{5}{9}(70-32) = \frac{5}{9}(38) = 21.1\,^{\circ}C$

31. Convert 22 °C to Fahrenheit

$\frac{9}{5}C + 32 = \frac{9}{5}(22) + 32 = 71.6\,^{\circ}F$

Solving Proportions Word Problems:

32. If there is $15 in a drawer and the ratio of money in drawer to money in the piggy bank is 3:5, then the how much money is in the piggy bank? 1 5 3

$\frac{3x}{3} = \frac{75}{3}$ $x = 25$

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

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

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

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

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

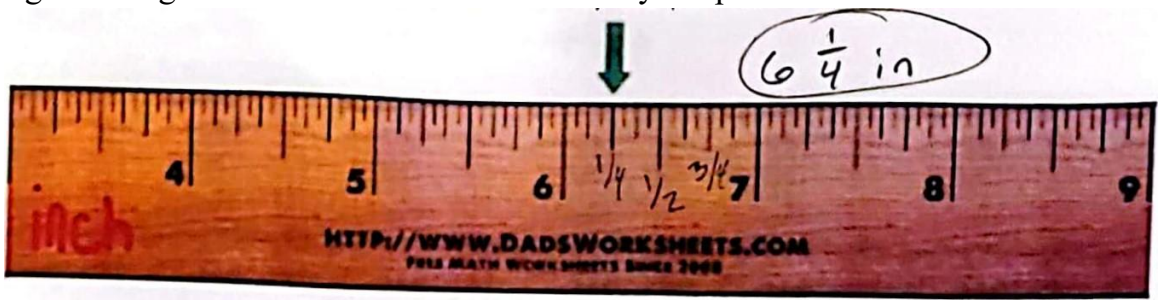
$\frac{2.2}{1} = \frac{x}{62}$ $\quad x = 62(2.2)$ $\quad = 136.4$ pounds

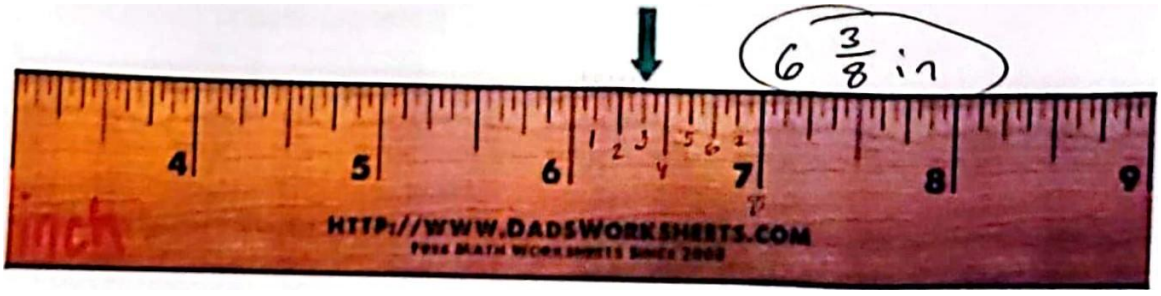
36. Knowing there are 60 drops in a teaspoon, how many teaspoons are 105 drops?

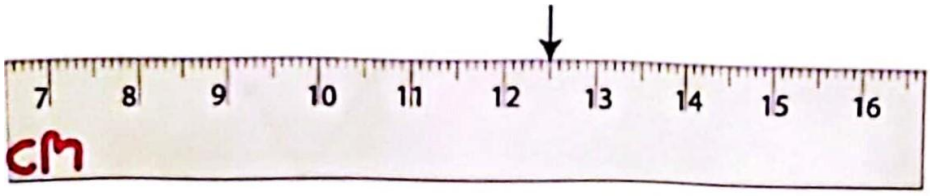
60 x 5 $\quad x = 1.75$ teaspoons

GG 60

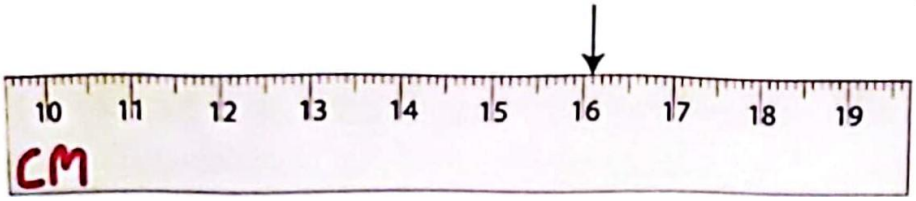
Reading a ruler: give the measurements indicated by the pointer

37. 

38. 

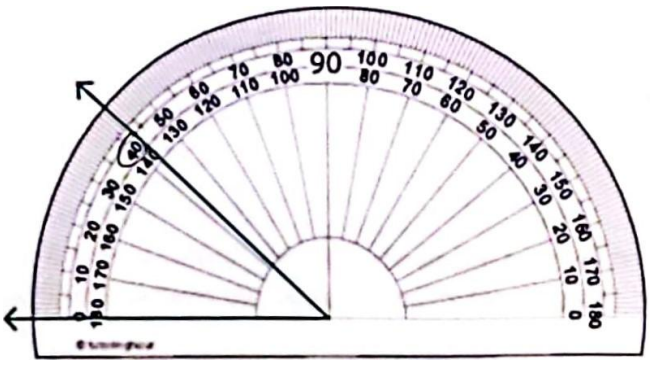
39. 

cm: 12.5 mm 125

40. 

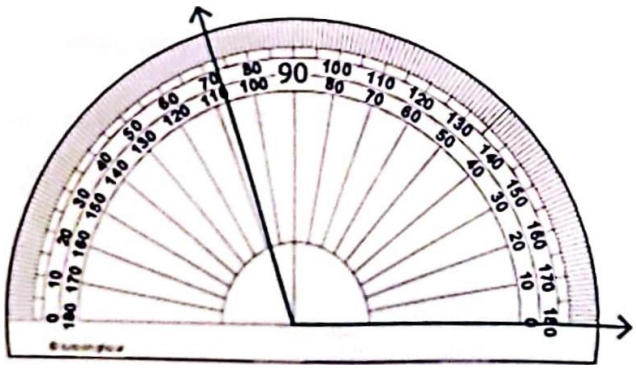
cm: 16.1 mm

Reading a Protractor:

41. 

acute angle = about 43°

less than

42. 

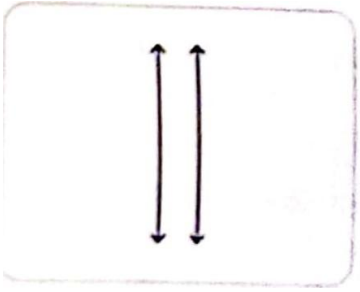
o bOSe angle = greater than 90°

Obo o b 72°

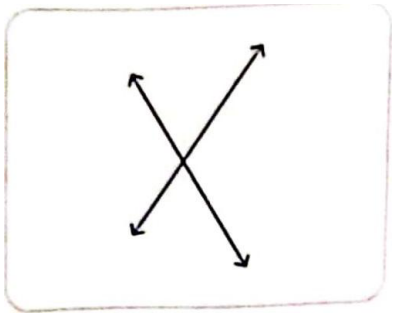
72

Parallel and Perpendicular Lines:

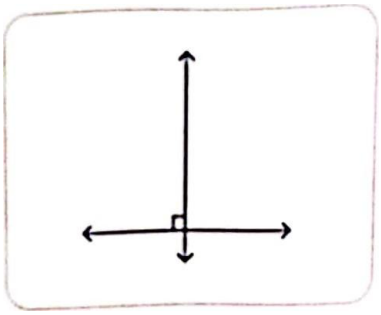
Name the following pairs of lines as parallel, perpendicular, or intersecting lines

43. 

parallel

44. 

intersecting

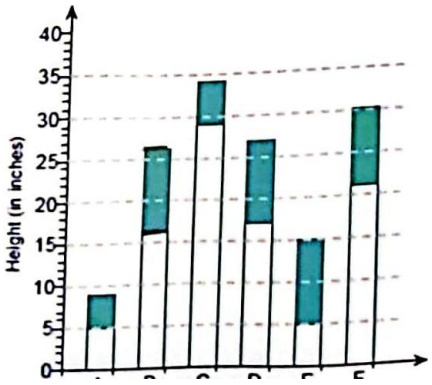
45. 

Perpendicular

intersect at a right (90°) angle

Reading Charts and Graphs:

46. 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.



has a minimum height of 16 inches? B

a. Which plant of this plant? 26 in

b. What is the maximum height of range in height? Plant A

c. Which plant has the smallest ran e_in height?

A B C D E F

Vanetv ot plants

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

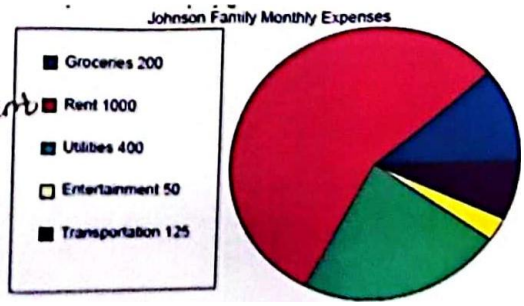
a. What expenditure is the largest? Which is smallest?

Largest = Rent Smallest = Entertainment

b. What is the ratio of rent to utilities?

1000 : 400 = 5 : 2

$\frac{1000}{400} = \frac{10}{4} = \frac{5}{2}$



c. What percent of their monthly expenses are groceries?

1000 : Vco

Coca/ : zoo 1000 + 400 + 50 + 125 : / 775

Groceries = 200

$\frac{200}{1775} = .11\,26 = 11.3\%$

Simplify Algebraic Expressions:

48. $4x^2 - 5x^2 - 6x + 10x + 5 + 7 =$ $-x^2 + 4x + 12$

Combine like terms

49. $2(4x + 3) =$ $2(4x) + 2(3) = 8x + 6$

Distributive Property

50. $(2x + 4)(-3x + 5) =$ $2x(-3x) + 2x(5) + 4(-3x) + 4(5)$

$= -6x^2 + 10x - 12x + 20$

$= -6x^2 - 2x + 20$

Extended Distributive Property

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

51. $x + 6 = 10$

$-6 \quad -6$

$x = 4$

52. $-5 + x = 12$

$+5 \quad +5$

$x = 17$

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

54. $\frac{2}{3}x = 5 \cdot \frac{3}{2}$

$x = \frac{5}{1} \cdot \frac{3}{2} = \frac{15}{2}$

55. $-x - 6 = 15$

$+6 \quad +6$

$\frac{-x}{-1} = \frac{21}{-1}$ $x = -21$

-1

56. $6x + 2 = 14$

$-2 \quad -2$

$\frac{6x}{6} = \frac{12}{6}$ $x = 2$

57. @5) = 2

60.

$4x - 20 = 3$

$+20 \quad +20$

$\frac{4x}{4} = \frac{23}{4}$

$x = \frac{11}{2}$

58. Consider: $\frac{x^2-4}{3y}$ evaluate when $x = -4$ and $y = 1$

$\frac{(-4)^2-4}{3(1)} = \frac{16-4}{3} = \frac{12}{3} = 4$

59. Consider: $(3x - (y + 2z)) - 1 = xz + y$. Find the value of x if $y = 2$ and $z = 4$

$(3x-(2+2(4))) - 1 = x(4) + 2$

$3x - 10 - 1 = 4x + 2$

$3x - 11 = 4x + 2$

$-4x \quad -4x$

$-x - 11 = 2$

$+11 \quad +11$

$\frac{-x}{-1} = \frac{13}{-1}$

$x = -13$

A car is moving at a speed of 45 miles per hour. If the driver doubles the speed of the car, then what would be the distance traveled in the next 2 hours? Use the formula $d = rt$

$r = 2(45) = 90$ $\quad d = 90(2) = 180$ miles