650

1. $m=4$ $\quad mp-mn$ $\quad$ Plug in the numbers

$n=-5$

$p=9$

$(4)(9)-(4)(-5)$

$=36-(-20)$

$=36+20$

$=56$

---

2. A- 19 mpg

B- 37 mpg

1406 miles total

$\#$ of gallons used $= \dfrac{\text{total miles}}{\text{mpg}}$

Gallons used for A $= \dfrac{1406}{19} = 74$

Gallons used for B $= \dfrac{1406}{37} = 38$

$\#$ of more gallons used for A than B $= 74-38 = \boxed{36 \text{ gallons}}$

---

3. $\dfrac{x}{y} = \dfrac{1}{9}$ $\quad \dfrac{y}{z} = \dfrac{9}{8}$ $\quad \dfrac{z}{x} = \dfrac{8}{1} = \boxed{8}$

$x=1$

$y=9$

$z=8$

---

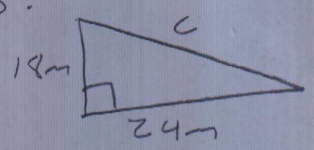
4. $12(x-7)=-11$ solve for x

$12x-84=-11$ Distribute

$12x=73$ ADD 84 to both sides

$x=\boxed{\dfrac{73}{12}}$ Divide both sides by 12.

5.



$A^2+B^2=C^2$ $\quad 18^2+24^2=C^2$ Solve for C

$A=18$ $\quad 324+576=C^2$ square #'s

$B=24$ $\quad 900=C^2$ combine like terms

$\boxed{30}=C$ take the square root of both sides

6. 4 sandwiches
2 soups
2 salads
2 drinks

# of combinations $= 4\cdot 2\cdot 2\cdot 2$
$= \boxed{32}$

7. $\frac{1}{9}$ of 63% of \$6,000?

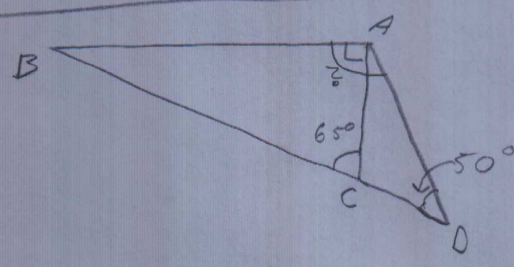
63% of \$6,000 = \$6,000 · 0.63 = \$3780

$\frac{1}{9}$ of \$3780 = $\frac{\$3780}{9}$ = $\boxed{\$420}$

8. d = # of DVD players
V = # of VCRs
company can make no more than 250 products in 1 week.

$\boxed{d+V\leq 250}$

9.



$\angle BAC$ is a right angle so $\angle BAC = 90°$
$\angle ACB$ and $\angle ACD$ must add to be 180° so $\angle ACD = 115°$ (180°-65° = 115°).
All angles in a triangle must add to be 180° so $\angle CAD = 15°$ (180°-50°-115°)
so $\angle BAD$ must be $\angle BAC + \angle CAD$,
so $\angle BAD = 90° + 15° = \boxed{105°}$

10. $(2x+3)(x-7)$

$2x^2-14x+3x-21$ Foil

$\boxed{2x^2-11x-21}$ combine like terms

---

11. $4\frac{2}{3} = \frac{1}{2}x$

Total Sugar Available

Amount of sugar required per cake

# of cakes

$4\frac{2}{3} = \frac{1}{2}x$ Solve for x

$\frac{14}{3} = \frac{1}{2}x$ Turn into an improper fraction

$\frac{28}{3} = x$ multiply both sides by 2

$x = 9\frac{1}{3}$ Turn into mixed number

$\boxed{9}$ Whole number

---

12. $F(x) = 6x^2+4x-11$

$F(-5) = ?$

$6(-5)^2+4(-5)-11$ Plug in -5 for x in F(x)

$6(25)+(-20)-11$ Order of operations

$150-20-11$

$130-11$

$\boxed{119}$

---

13. $-x^2-x$ Factor out a -x

$\boxed{-x(x+1)}$

---

14. 2 : 3 : 4

Sophomore : Juniors : Seniors

- 15 juniors
- keep the same proportion for everything.

$\frac{15}{3} = 5$ (all values multiplied by 5)

multiplying by 5 $2\cdot5 : 3\cdot5 : 4\cdot5$

$10 : 15 : 20$

Add them: $10+15+20 = \boxed{45}$

15. $-34+x=-14$ Find how much it's changing by

$x=20$ ADD 34 to both sides.

$-14+20=\boxed{6}$ ADD 20 to find out the number that came right before.

---

16. S = Annual Salary
D = Deductions

Take home pay as a fraction of his Annual Salary $= \frac{\text{Annual Salary} - \text{Deductions}}{\text{Annual Salary}}$

$$\boxed{\frac{S-D}{S}}$$

---

17. $\text{Seconds} = \frac{Ft}{Ft/sec}$ $\quad \text{Seconds} = \frac{200}{1120} \approx .1786$

Pick the closest answer.

$\boxed{0.2}$

---

18. $6y-18x=6$ Put into $y=mx+b$

$6y-18x=6$ Set into form $y=mx+b$

$6y=18x+6$ ADD $18x$ to both sides

$y=3x+1$ Divide both sides by 6.

$\uparrow$ Slope

$\boxed{3}$

---

19. $6.95x+3.95y=46.60$

$x+y=8$

x = # of adults

y = # of children

\$6.95 = Price per adult

\$3.95 = Price per adult

8 = total # of people

\$46.60 = total money spent

Solve for x by substituting for y

$y=8-x$ Substitute for y

$6.95x+3.95(8-x)=46.60$ - Distribute

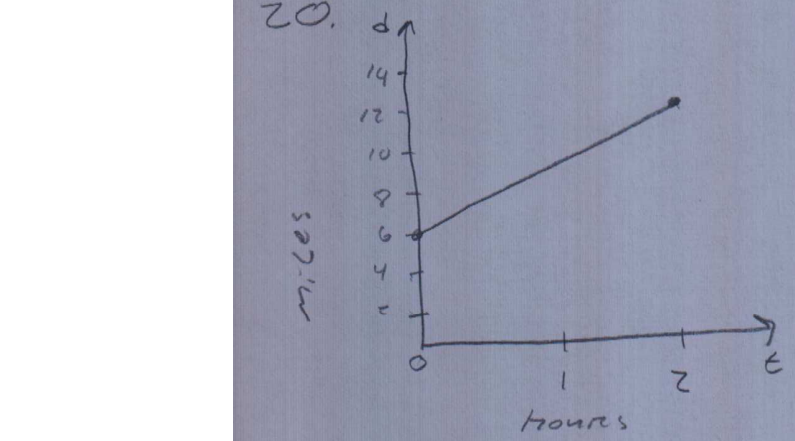
$6.95x-3.95x+31.6=46.60$ - Combine like terms

$3.00x+31.6=46.60$ - Subtract 31.6 from both sides

$3.00x=15.00$ - Divide both sides by 3.

$x=\boxed{5}$

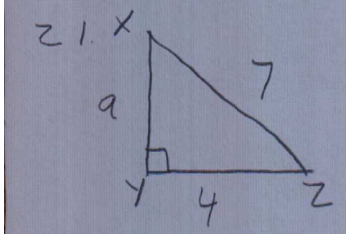
20.



The d-Axis tells you how far you are from home.

When you start, you are 6 miles from home, and after 2 hours are 12 miles from home.

21.



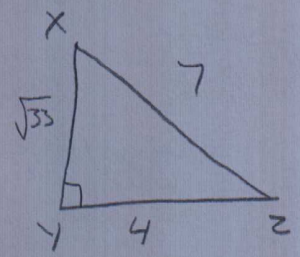
$\cos Z = \frac{4}{7}$

cosine is $\frac{\text{Adjacent}}{\text{hypotenuse}}$

$a = ?$

$b = 4$

$c = 7$



$\cos X = \boxed{\frac{\sqrt{33}}{7}}$

$\frac{\text{Adjacent}}{\text{hypotenuse}}$

The missing side can be found using Pythagorean Theorem.

$a^2 + b^2 = c^2$ Plug in the numbers

$a^2 + 4^2 = 7^2$ Compute

$a^2 + 16 = 49$ Subtract 16 from both sides

$a^2 = 33$ Take the square root of both sides.

$a = \sqrt{33}$