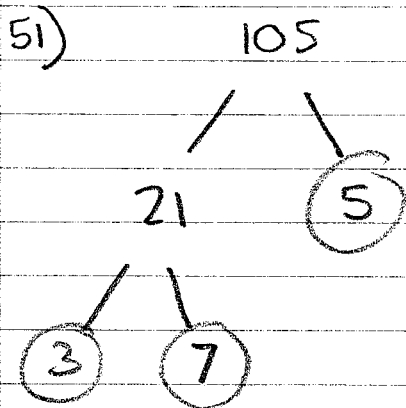


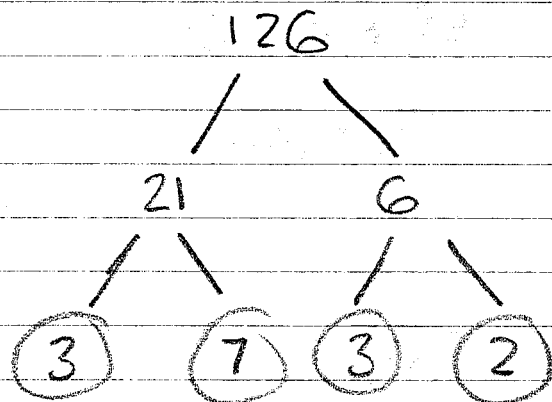
2010-2011 Form A



$$105 = 3 \times 5 \times 7$$

$$(3) \times 5 \times (7)$$

$$2 \times (3) \times 3 \times (7)$$



$$126 = 2 \times 3 \times 3 \times 7$$

$$\text{GCF} = 3 \times 7 = \boxed{21}$$

(D)

52) Evon's $\$ = x$
Simone's $\$ = 2x$
Marcos $\$ = 2x$

$$x + 2x + 2x = 1800$$

$$\begin{array}{r} 5x = 1800 \\ \hline 5 \quad \quad 5 \end{array}$$

$$x = \boxed{360}$$

(F)

$$53) \overline{NQ} = 30$$

$$\overline{MN} : \overline{NQ} = 3 : 2$$

So

$$\frac{\overline{MN}}{\overline{NQ}} = \frac{3}{2}$$

$$\frac{\overline{MN}}{30} = \frac{3}{2}$$

cross-multiply

$$2 \cdot \overline{MN} = 90$$

$$\overline{MN} = 45$$

$$\overline{NP} : \overline{PQ} = 2 : 1$$

$$\overline{NP} = 2x \quad \overline{PQ} = x$$

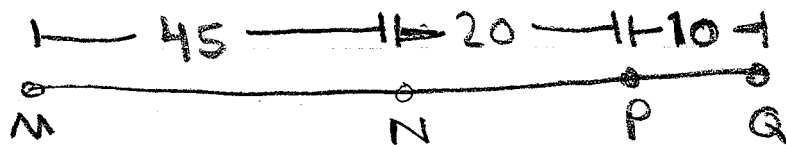
$$\overline{NP} + \overline{PQ} = \overline{NQ}$$

$$2x + x = 30$$

$$\frac{3x}{3} = \frac{30}{3}$$

$$x = 10$$

So $\overline{NP} = 2x = 20$
and $\overline{PQ} = x = 10$



$$\text{So } \overline{MP} = 45 + 20 = \boxed{65 \text{ cm}} \quad \text{(E)}$$

$$54) 48.762 \times 100$$

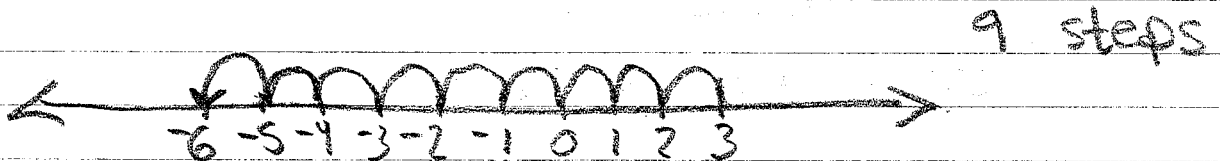
$$48.762 \times 100 \rightarrow$$

$$4.8762 \times 1000 = 4.8762 \times 10^3$$

(J)

$$55) Q = \frac{S+R}{2} = \frac{-10+(-2)}{2} = \frac{-12}{2} = -6$$

$$\overline{PQ} = P - Q = 3 - (-6) = \boxed{9} \quad \text{(D)}$$



$$56) x + x + x + 2x + 2x + 2x + 2x + 2x + 2x + 12 + 13 = 100$$

$$15x + 25 = 100$$

$$\frac{15x}{15} = \frac{75}{15}$$

$$x = \boxed{5}$$

(G)

$$57) 3|x| - 5|y| =$$

$$3|-7| - 5|-11| =$$

$$3(7) - 5(11) =$$

$$21 - 55 =$$

$$\boxed{-34}$$

(B)

$$58) (\sqrt{36})(\sqrt{16}) =$$

$$6 \times 4 =$$

$$\boxed{24}$$

(H)

$$59) 9 \text{ AM} + 42 \text{ hrs}$$

$$9 \text{ AM} + 24 \text{ hrs} = 9 \text{ AM}$$

18 hrs left

$$9 \text{ AM} + 12 \text{ hrs} = 9 \text{ PM}$$

6 hrs left

$$9 \text{ PM} + 6 \text{ hrs} = \boxed{3 \text{ AM}}$$

(A)

60) Plug in each number in the set for n .

$$\frac{4.2 \cdot 2.0}{1.2} = \frac{8.4}{1.2} = 7$$

2.0 works J

61) Nums with 5 as a factor:
5, 10, 15, 20, 25, 30, 35, 40, 45, ...

Nums with 10 as a factor:
10, 20, 30, 40, 50, ...

So nums w/ only 5 and not 10 as a factor:

5, 15, 25, 35, 45, ...

Notice these are all the numbers that end in 5.

So list and count:

5, 15, 25, 35, 45, 55, 65, 75, 85, 95, 105, 115,
125, 135, 145, 155, 165, 175

18 numbers E

62) $10 < n < 19$

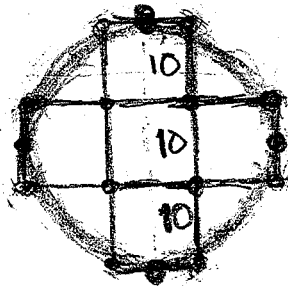
11 12 13 14 15 16 17 18

Evens:

12, 14, 16, 18

$$\text{Mean} = \frac{12 + 14 + 16 + 18}{4} = \frac{60}{4} = \boxed{15} \quad \text{(H)}$$

63)



radius = 15
diameter = 30

5 squares with sides of 10

So each has area $10 \times 10 = 100$

$$\text{Total area: } 100 \times 5 = \boxed{500 \text{ sq cm}} \quad \text{(D)}$$

$$64) 40 \div \frac{2}{5} = \frac{40}{1} \cdot \frac{5}{2} = \frac{200}{2} = \boxed{100} \quad \text{(H)}$$

65) $\overset{3}{3.78}$ rate per hour
 $\times \overset{4}{6.5}$ hours $24.570 = 24.57$ per day

$$\begin{array}{r} 1890 \\ + 22680 \\ \hline \end{array}$$

$$\begin{array}{r}
 \text{\$}24.57 \text{ per day} \\
 \times \quad \quad \quad \text{3 days} \\
 \hline
 \text{\$}73.71 \text{ total}
 \end{array}$$

$$\boxed{\text{\$}73.71}$$

(E)

$$66) \text{\$}(3, 5, 6, 3) - \text{\$}(4, 6, 3, 5) =$$

$$\text{\$}(3, 5, 6, 3) \quad w=3, x=5, y=6, z=3$$

$$\text{Add } 3+5 = 8$$

$$\text{Multiply } 8 \text{ by } 6 = 48$$

$$\text{Subtract } 3: 48-3 = 45$$

$$\text{so } \text{\$}(3, 5, 6, 3) = 45$$

$$\text{\$}(4, 6, 3, 5) \quad w=4, x=6, y=3, z=5$$

$$\text{Add } 4 \text{ and } 6: 4+6 = 10$$

$$\text{Multiply by } 3: 10 \cdot 3 = 30$$

$$\text{Subtract } 5: 30-5 = 25$$

$$\text{so } \text{\$}(4, 6, 3, 5) = 25$$

$$\text{So, } \text{\$}(3, 5, 6, 3) - \text{\$}(4, 6, 3, 5) = 45 - 25 = \boxed{20}$$

(H)

67) 13 out of 25 did not pick "Fuzz Brothers"

What percentage is 13 out of 25?

$$\frac{13}{25} = \frac{52}{100} = \boxed{52\%} \quad \text{(E)}$$

68) Try different combos:

$$1 \cdot 2 \cdot 3 = 6$$

$$1 \cdot 3 \cdot 4 = 12$$

$$1 \cdot 2 \cdot 4 = 8$$

$1 \cdot 2 \cdot 5 = 10$ - Only possible combo

$$1 + 2 + 5 = \boxed{8} \quad \text{(G)}$$

69) $p = \pi r^2$

$$q = 2\pi r$$

$$p = 2.5q \quad \pi r^2 = 2.5 \cdot 2\pi r$$

So $\pi r^2 = 5\pi r$

$$\frac{\pi r^2}{\pi r} = \frac{5\pi r}{\pi r}$$

$$r = \boxed{5} \quad \text{(D)}$$

$$70) \text{ Area} = \left(\frac{B_1 + B_2}{2} \right) \times H = \left(\frac{20 + 30}{2} \right) \times 15$$

$$= \frac{50}{2} \times 15 = 25 \times 15 = \boxed{375 \text{ cm}^2} \quad \textcircled{J}$$

$$71) \frac{4}{5} \neq \frac{x^2}{20}$$

$$\frac{80}{5} = \frac{5x^2}{5}$$

$$16 = x^2$$

$$\boxed{4} = x \quad (\text{or } x = -4, \text{ but we're only looking for positives})$$

\textcircled{A}

72) Guess and check

$$50 + 60 + 70 + 80 = 260$$

No. Go higher.

$$60 + 70 + 80 + 90 = 300 \quad \checkmark$$

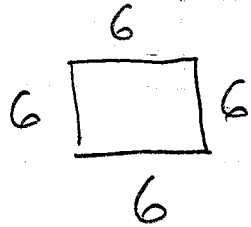
Note: the average of these numbers is 75, and $75 \cdot 4 = 300$

$\boxed{60}$ is the least

\textcircled{K}

73) Perimeter of triangle: $8+8+8=24$

So square has perimeter of 24. Then it must have sides of 6.



So, area = $6 \times 6 = 36 \text{ cm}^2$ (D)

74) Younger brother = 8

Jorge = $3(8) - 5 = 24 - 5 = 19$ (H)

75) 16% of 10,000 =

$.16 \times 10000 = 1,600 \text{ lbs}$ (D)

76) Put number of visitors in order:
16, 17, 17, 18, 19, 20, 21, 21, 21

Then find the median:

~~16~~, ~~17~~, ~~17~~, ~~18~~, 19, ~~20~~, ~~21~~, ~~21~~, ~~21~~

(H)

77) Plug in

$$x = 14 \quad y = 11$$

$$\begin{aligned} & 5x(x-y) \\ &= 5(14)(14-11) \\ &= 5(14)(3) \\ &= 210 \end{aligned}$$

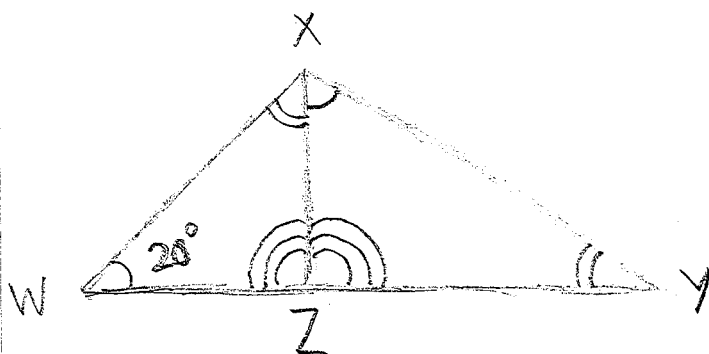
(E)

78) $\triangle WXZ \sim \triangle XYZ$ ($\triangle WXZ$ is similar to $\triangle XYZ$)

$$\begin{aligned} \text{So } \angle ZWX &\cong \angle ZXY \\ \angle WXZ &\cong \angle XYZ \\ \angle XZW &\cong \angle YZX \end{aligned}$$

because corresponding angles in similar triangles are congruent. We can tell which angles are corresponding by the order of letters in the triangle names. $\triangle WXZ \sim \triangle XYZ$ so $\angle W$ in the first triangle is congruent to $\angle X$ in the second, $\angle X$ in the first is congruent to $\angle Y$ in the second, and $\angle Z$ in the first is congruent to $\angle Z$ in the second.

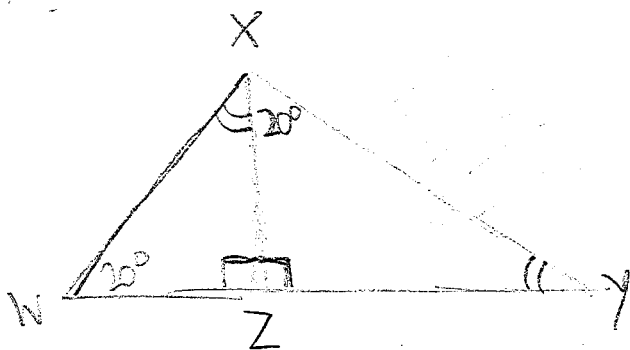
So we have so far:



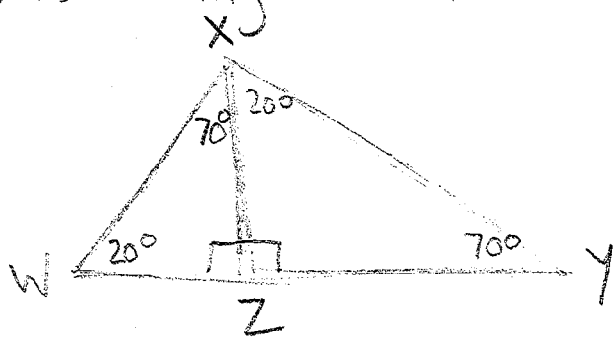
So $\angle ZXY$ is also 20° .

$\angle XZW$ and $\angle XZY$ must add to 180° since they are on a straight line, so they are both 90° .

Then



Now in both triangles, we have a 90° angle and a 20° angle. The angles in a triangle add to 180° , and the angles we have already add to $90^\circ + 20^\circ = 110^\circ$, so the last angles are $180^\circ - 110^\circ = 70^\circ$.



The m means "measure of" so
this is the degree measure of
 $\angle WXY$

So $m\angle WXY = 70^\circ + 20^\circ = \boxed{90^\circ}$ (H)

A) $3(p-4) = 2(p+1)$

$$\begin{array}{r} 3p - 12 = 2p + 2 \\ +12 \qquad +12 \end{array}$$

$$\begin{array}{r} 3p = 2p + 14 \\ -2p \qquad -2p \end{array}$$

$\boxed{p = 14}$ (E)

80) Probability of green =

$$\frac{\# \text{ of green candies}}{\# \text{ of total candies}}$$

Let g = number of green candies

So $\frac{1}{4} = \frac{g}{20}$

Cross-multiply

$$20 = 4g$$

$$\frac{20}{4} = \frac{4g}{4}$$

$$5 = g$$

so there are 5 green candies

To make probability of green $\frac{1}{6}$,

$$\frac{g}{\text{total candies}} = \frac{1}{6}$$

But we are not changing the number of greens, we are adding yellows, which changes the total

Let $t =$ the new total

$$\text{The } \frac{5}{t} = \frac{1}{6}$$

Cross-multiply

$$30 = t$$

So there need to be 30 total candies, which means we need to add 10 yellows

(K)

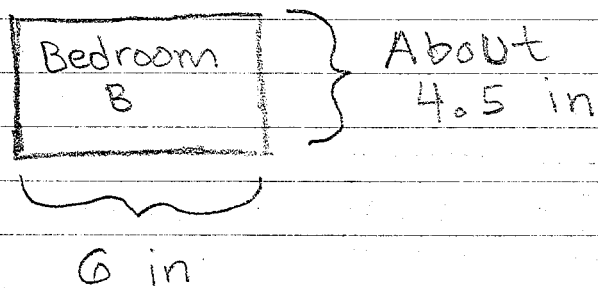
81) On Monday John finishes $\frac{1}{2}$ his work, so he has $\frac{1}{2}$ left. On Tuesday he finishes $\frac{1}{4}$ of the remainder, or $\frac{1}{4}$ of $\frac{1}{2}$.

$\frac{1}{4}$ of $\frac{1}{2} = \frac{1}{4} \cdot \frac{1}{2} = \frac{1}{8}$
so on Tuesday he finishes $\frac{1}{8}$.

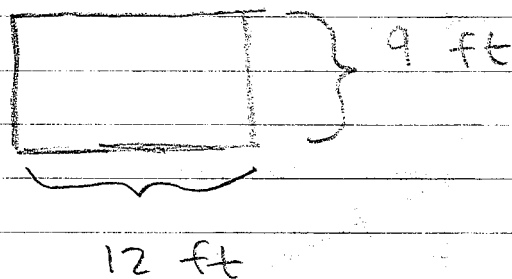
So far he has finished $\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}$

He has left $1 - \frac{5}{8} = \frac{8}{8} - \frac{5}{8} = \frac{3}{8}$ (D)

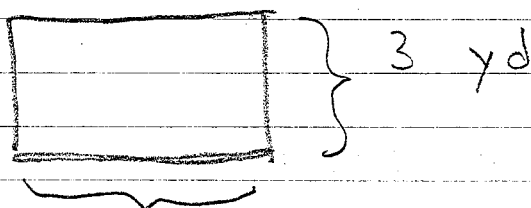
82) Let's look at just bedroom B



On the diagram every inch represents 2 feet, so this is



Now 1 yard = 3 ft, so it is



which has area $3 \text{ yd} \cdot 4 \text{ yd} = 12 \text{ yd}^2$ (F)

83) Nicki has n stamps which is half as many as Mark, so Mark has $2n$.

$$\text{Nicki} + \text{Mark} = \text{Basilio} + 100$$

$$n + 2n = \text{Basilio} + 100$$

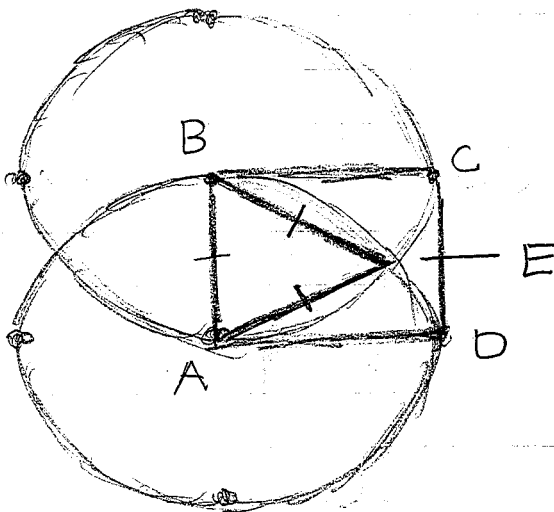
$$3n = \text{Basilio} + 100$$

-100

-100

$$\boxed{3n - 100} = \text{Basilio} \quad \textcircled{A}$$

84)



\textcircled{A} A is the circle with center A,
 \textcircled{B} B is the circle with center B.
 \overline{AB} is a radius of both, so they
have the same radius and are the same

size. Let's draw \overline{AE} and \overline{BE} . \overline{AE} is a radius of $\odot A$ and \overline{BE} is a radius of $\odot B$, so $\overline{AE} \cong \overline{BE} \cong \overline{AB}$ since they are all radii of equally sized circles. So $\triangle ABE$ has 3 equal sides, so it is an equilateral triangle and must have equal angles. So all the angles including $\angle EBA$ must be $\boxed{60^\circ}$. (J)

85) Let $J = \text{Jae-Lynn's age now}$.

| | Now | In 10 years |
|----------------|------|-------------|
| Jae-Lynn's age | J | $J+10$ |
| Paula's age | $4J$ | $4J+10$ |

If Jae-Lynn is 16 in 10 years,

$$\begin{array}{r} J+10 = 16 \\ -10 \quad -10 \\ \hline \end{array}$$

$$J = 6$$

So Paula is now $4J = 4(6) = 24$

So 4 years ago she was $24 - 4 = \boxed{20}$

(D)

86) The winner got 55% of 17,000 =

$$\begin{array}{r} 17000 \\ \times \quad .55 \\ \hline 85000 \\ + 850000 \\ \hline 9350.00 = \end{array}$$

9350 votes. The loser got the rest, which was

$$\begin{array}{r} 17'000 \\ - 9350 \\ \hline 7650 = \end{array}$$

7650 votes. To find how many more the winner got, we do $9350 - 7650 = \boxed{1700 \text{ votes}}$ (G)

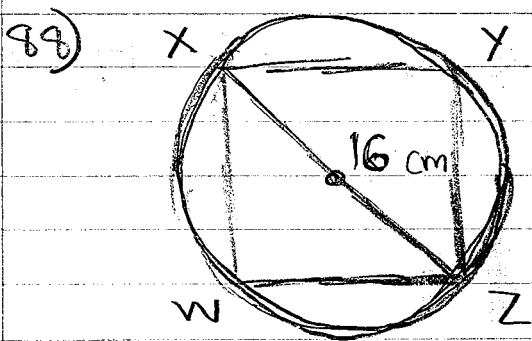
Quick version: The winner got 55%, so the loser got 45%. The difference is 10%. 10% of 17000 is 1700.

87)

$$\begin{array}{r} 9 \quad \text{r. } 7 \\ 15 \overline{)142} \\ \underline{-135} \\ 7 \end{array}$$

He can fill 9 boxes with 135 candles, and he will have $\boxed{7}$ left over.

(A)



\overline{XZ} is a diagonal of the square, so it is 16 cm long. But it is also a diameter of the circle. The radius is half the diameter, or 8 cm.

$$\text{Circumference} = 2\pi r = 2\pi(8) = \boxed{16\pi \text{ cm}}$$

(G)

Note: Another formula is

$$\begin{aligned} \text{Circumference} &= \pi \cdot \text{diameter} \\ &= \pi \cdot 16 = 16\pi \text{ cm} \end{aligned}$$

89) Let's think in feet. $\frac{1}{2}$ a fathom is 1 yd which is 3 ft, so a fathom must be 6 ft. A furlong is 660 ft, so we want to know how many times 6 goes into 660.

$$660 \div 6 = \boxed{110} \quad (\text{B})$$

90) Plug in $x =$

$$x = 3$$

$$6x(2y - 3x) = 18$$

$$6(3)(2y - 3(3)) = 18$$

$$18(2y - 9) = 18$$

Distribute the 18:

$$\begin{array}{r} 36y - 162 = 18 \\ + 162 \quad + 162 \end{array}$$

$$\begin{array}{r} 36y = 180 \\ \hline 36 \quad 36 \end{array}$$

$$\boxed{y = 5}$$

(H)

9) Plug in $n=4$, $k=13$

$$\frac{n}{20} = \frac{k}{x}$$

$$\frac{4}{20} = \frac{13}{x}$$

Reduce

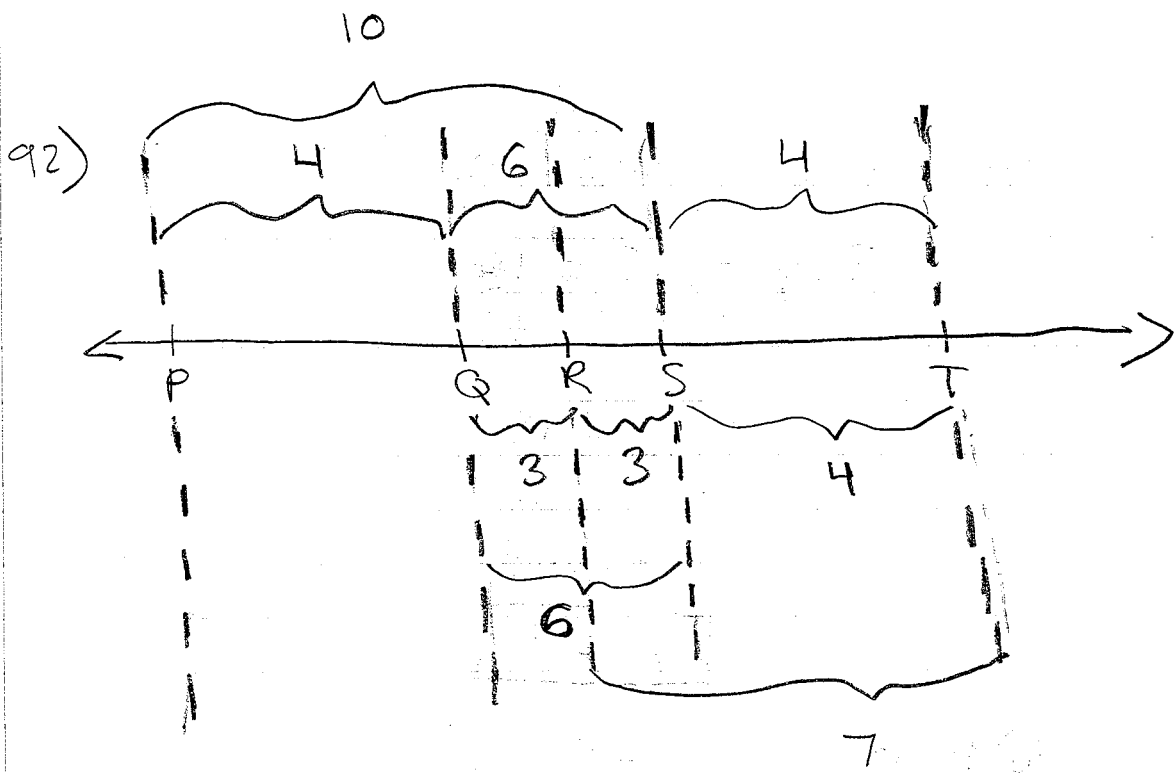
$$\frac{1}{5} = \frac{13}{x}$$

Cross-multiply

$$\frac{1}{5} \times \frac{13}{x}$$

$$\boxed{x = 65}$$

(D)



$$\overline{QS} = \overline{QR} + \overline{RS}$$

$$6 = x + x$$

$$6 = 2x$$

$$3 = x$$

$$\text{so } \overline{QR} = \overline{RS} = 3$$

$$\overline{PS} = \overline{PQ} + \overline{QS}$$

$$10 = \overline{PQ} + 6$$

$$\overline{PQ} = 4$$

$$\overline{RT} = \overline{RS} + \overline{ST}$$

$$7 = 3 + \overline{ST}$$

$$\overline{ST} = 4$$

$$\overline{PT} = \overline{PS} + \overline{ST} = 10 + 4 = \boxed{14 \text{ cm}}$$

(H)

93) Set up equation

Ralston

$$y = 2x + 3$$

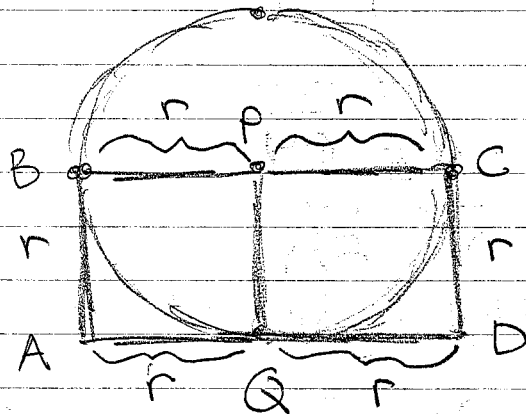
Baker \nearrow \nwarrow \nearrow \nwarrow

twice as many

three more than

(B)

94)



Let $r =$
radius length

\overline{BC} is a diameter, \overline{PQ} is a radius,
 $\overline{BC} = \overline{AD}$, $\overline{PQ} = \overline{AB} = \overline{CD}$

$$\overline{AD} = \overline{BC} = 2r \quad \overline{AB} = \overline{CD} = r$$

The perimeter is $\overline{AB} + \overline{BC} + \overline{CD} + \overline{AD} =$
 $r + 2r + r + 2r = 6r$

So $6r = 48$

$$\frac{6r}{6} = \frac{48}{6}$$

$$r = 8$$

⊙ Area = $\pi r^2 = \pi (8)^2 =$

64π

(J)

$$95) \left(\frac{1}{2} + \frac{2}{5} \right) \div \frac{2}{3}$$

$$\frac{1}{2} + \frac{2}{5} = \frac{5}{10} + \frac{4}{10} = \frac{9}{10} \quad \text{so}$$

$$\left(\frac{1}{2} + \frac{2}{5} \right) \div \frac{2}{3} = \frac{9}{10} \div \frac{2}{3} = \frac{9}{10} \cdot \frac{3}{2} =$$

$$\boxed{\frac{27}{20}}$$

(E)

$$96) \text{ Mean} = \frac{\text{Sum}}{\text{Quantity}}$$

$$\text{so Sum} = \text{Mean} \cdot \text{Quantity}$$

so the sum of the 3 scores is

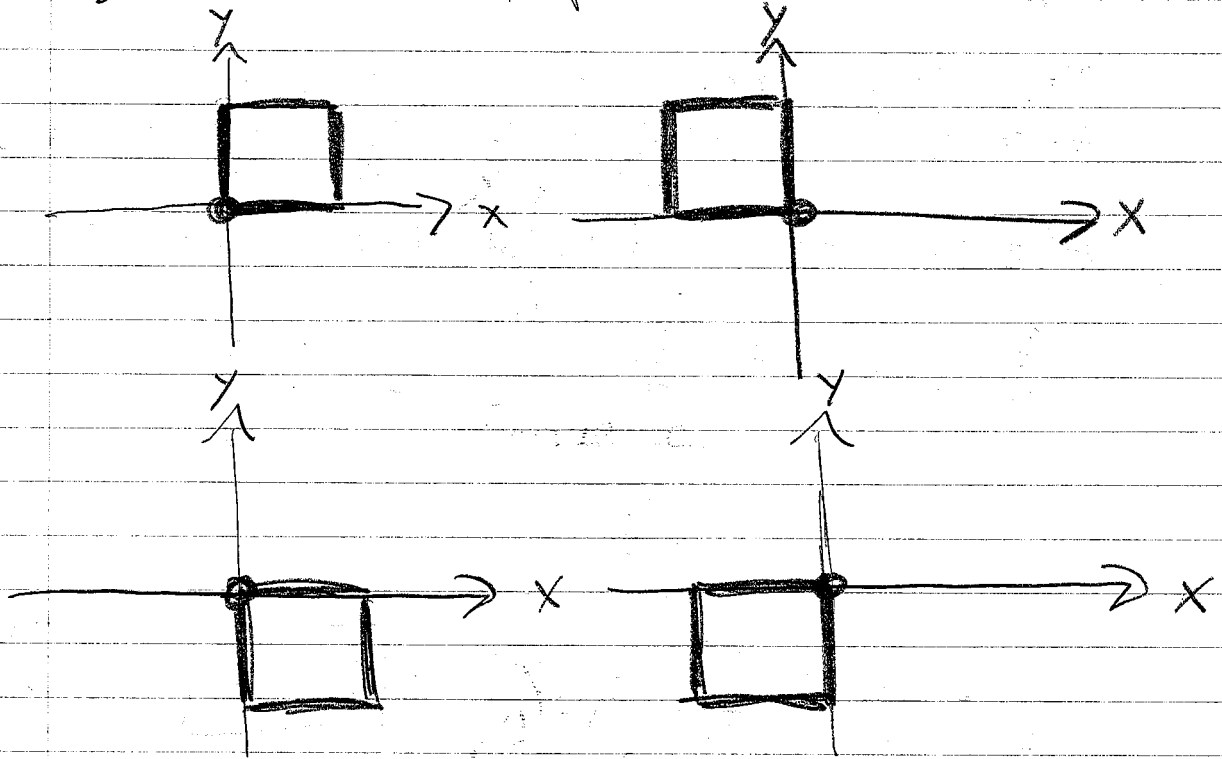
$$\text{mean} \cdot \text{quantity} = 51 \cdot 3 = 153$$

The first 2 scores add to
 $60 + 50 = 110$ so the 3rd score is

$$153 - 110 = \boxed{43}$$

(F)

97) There are 4 possibilities



All of them have a corner at $(0,0)$

(A)

98) We start with 7 black, 4 yellow and $27 - (7 + 4) = 16$ red. If we remove 3 black, there are 4 black, 4 yellow and 16 red, and a total of 24 marbles. The probability of getting a red now is $\frac{\# \text{ red}}{\text{total}} =$

$$\frac{16}{24} = \frac{2}{3}$$

(K)

99) Zoe ate $\frac{1}{8}$, Jasmine ate $\frac{2}{8} = \frac{1}{4}$

Together they ate $\frac{1}{8} + \frac{2}{8} = \frac{3}{8}$ and there is $1 - \frac{3}{8} = \frac{8}{8} - \frac{3}{8} = \frac{5}{8}$ left.

Pizza eaten : Pizza remaining =

$$\frac{3}{8} : \frac{5}{8} = \frac{3}{8} = \frac{3}{8} \div \frac{5}{8} = \frac{3}{5}$$

$$\frac{3}{8} \cdot \frac{8}{8} = \frac{24}{40} = \frac{3}{5} = \boxed{3:5} \quad \textcircled{C}$$

(since ratios are really fractions in disguise)

100) Go through the choices

F) $x+1 = \text{even} + \text{odd} = \text{odd}$. Always odd

G) Can be even or odd

If $x=6$, $\frac{x}{2} = 3$. If $x=8$, $\frac{x}{2} = 4$

H) Can't be odd. If $\frac{3}{x} = y$ and y is

odd, then $x \cdot y = 3$. But x is even and y is odd, so $x \cdot y$ must be even, which is impossible.

J) $2x$ is even \cdot even, so $2x$ is even. Then

$2x+1$ is even + odd = odd. Always odd.

K) $2x$ is even. $2x-1 = \text{even} - \text{odd} = \text{odd}$. Always odd.