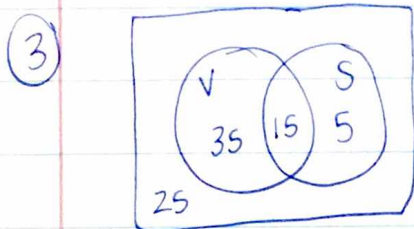
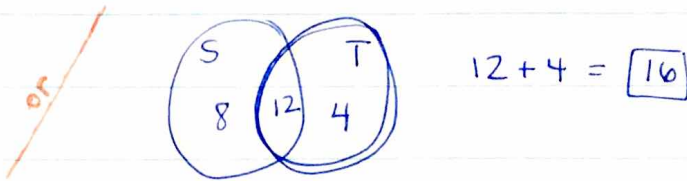


# ICM Midterm Exam Review #1 ANSWERS

①  $\{1, 3, 9\}$

②  $20 + x - 12 = 24$   
 $x = \boxed{16}$



$\boxed{25}$

④  ${}^9P_4 = \boxed{3024}$

⑤  ${}_{10}C_4 = \boxed{210}$

⑥  $\{DD, DR, DI, RR, RD, RI, II, ID, IR\}$

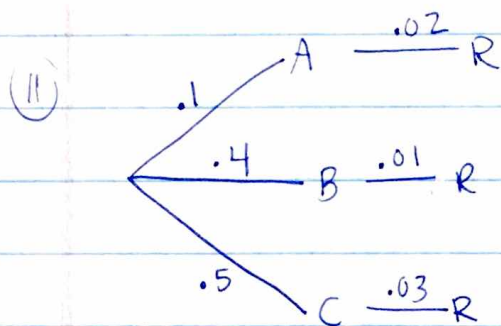
⑦ Total = 40

X	A	B	C	D	F
$P(X=x)$	.15	.2	.35	.225	.075

⑧  $P(\text{Heads 3 times}) = \frac{{}^4C_3}{2^4} = \frac{4}{16} = \boxed{\frac{1}{4}}$

⑨  $P(\text{2 blue and 2 red}) = \frac{{}^8C_2 \cdot {}^5C_2}{{}^{13}C_4} = \frac{28(10)}{715} = \boxed{.392}$

$$\begin{aligned}
 (10) \quad P(\text{at least 1 defective}) &= 1 - P(\text{no defective}) \\
 &= 1 - \frac{C(27,5)}{C(30,5)} \\
 &= 1 - .567 \\
 &= \boxed{.433}
 \end{aligned}$$



$$\begin{aligned}
 P(A|R) &= \frac{P(A \cap R)}{P(R)} \\
 &= \frac{.1(.02)}{.1(.02) + .4(.01) + .5(.03)}
 \end{aligned}$$

$$= \frac{.002}{.021} = \boxed{.095}$$

$$(12) \quad \frac{700}{1200} = \boxed{\frac{7}{12}}$$

$$(13) \quad \frac{100}{500} = \boxed{\frac{1}{5}}$$

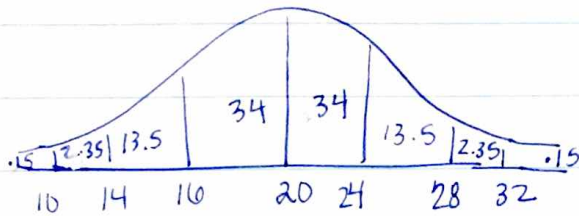
$$(14) \quad .22 + .26 + .12 + .02 = \boxed{.62}$$

$$(15) \quad \bar{x} = \boxed{67.2}$$

$$(16) \quad \bar{x} = E(X) = \frac{6(.50) + 3(.25) + 10(.10) + 5(.05)}{24} = .21 \quad \text{or} \quad \boxed{21\%}$$

$$(17) \quad \frac{4}{4+7} = \boxed{\frac{4}{11}}$$

18) a)  $P(X > 28) = \text{normalcdf}(28, 10^{99}, 20, 4) = \boxed{.023}$



or  $2.35 + .15 = \boxed{2.5\%}$

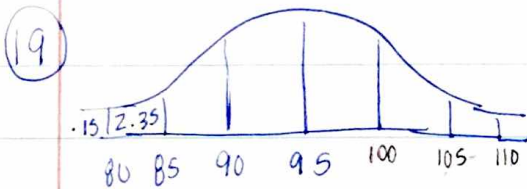
b)  $P(X < 16) = .15 + .2.35 + .13.5 = 16\%$

or

$\text{normalcdf}(0, 16, 20, 4) = .159$

$.16(2000) =$

$\boxed{320}$



a)  $2.35 + .15 = \boxed{2.5\%}$

b)  $2.35 + .15 = 2.5\%$

$.025(8000) = \boxed{200 \text{ cars}}$

20) a) binomial pdf  $(n, p, x) = \boxed{.481}$

$n = 24 \quad p = .03 \quad x = 0$

b)  $P(\text{at least 1 cracked}) = 1 - P(\text{none cracked})$

$= 1 - .481$

$= \boxed{.519}$

c) binomial pdf  $(24, .03, 2) = \boxed{.127}$