

M\$6 Exam 6 Review Sheet SOLUTIONS

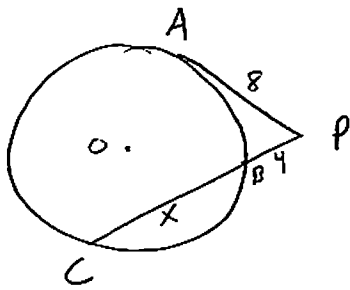
$$\begin{aligned}
 \textcircled{1} \text{ a.) } \sum_{n=1}^4 (2n-3)^2 &= [2(1)-3]^2 + [2(2)-3]^2 + [2(3)-3]^2 + [2(4)-3]^2 \\
 &= (-1)^2 + (1)^2 + (3)^2 + (5)^2 \\
 &= 1 + 1 + 9 + 25 \\
 &= \boxed{36}
 \end{aligned}$$

$$\begin{aligned}
 \text{b.) } \sum_{k=0}^3 \left(\sin \frac{k\pi}{2} \right) &= \sin \frac{0\pi}{2} + \sin \frac{1\pi}{2} + \sin \frac{2\pi}{2} + \sin \frac{3\pi}{2} \\
 &= \sin 0 + \sin \frac{\pi}{2} + \sin \pi + \sin \frac{3\pi}{2} \\
 &= 0 + 1 + 0 + -1 \\
 &= \boxed{0}
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{2} \text{ } P(\text{on base}) &= \frac{3}{7} \\
 n &= 4 \\
 r &= 0, 1, 2 \\
 &= {}_4C_0 \left(\frac{3}{7}\right)^0 \left(\frac{4}{7}\right)^4 + {}_4C_1 \left(\frac{3}{7}\right)^1 \left(\frac{4}{7}\right)^3 + {}_4C_2 \left(\frac{3}{7}\right)^2 \left(\frac{4}{7}\right)^2 \\
 &= (1)(1) \left(\frac{256}{2401}\right) + (4) \left(\frac{3}{7}\right) \left(\frac{64}{343}\right) + (6) \left(\frac{9}{49}\right) \left(\frac{16}{49}\right) \\
 &= \frac{256}{2401} + \frac{768}{2401} + \frac{864}{2401} \\
 &= \boxed{\frac{1888}{2401}}
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{3} \text{ } P(\text{hits target}) &= \frac{A_{\text{small } \circ}}{A_{\text{large } \circ}} \\
 &= \frac{\pi(1)^2}{\pi(5)^2} \\
 &= \frac{1}{25} \\
 n &= 3 \\
 r &= 2, 3 \\
 &= {}_3C_2 \left(\frac{1}{25}\right)^2 \left(\frac{24}{25}\right)^1 + {}_3C_3 \left(\frac{1}{25}\right)^3 \left(\frac{24}{25}\right)^0 \\
 &= (3) \left(\frac{1}{625}\right) \left(\frac{24}{25}\right) + (1) \left(\frac{1}{15625}\right) (1) \\
 &= \frac{72}{15625} + \frac{1}{15625} \\
 &= \boxed{\frac{73}{15625} \text{ or } 0.004672}
 \end{aligned}$$

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$$(PA)^2 = (PB)(PC)$$

$$(8)^2 = (4)(4+x)$$

$$64 = 16 + 4x$$

$$48 = 4x$$

$$\boxed{12} = x$$

4) Enter data in L, (STAT, EDIT)
STAT, CALC, 1-Var Stats

$$\bar{x} \approx 278.58\bar{3}$$

$$\bar{x} + S_x \approx 281.73$$

$$S_x \approx 3.14667$$

$$\bar{x} - S_x \approx 275.436$$

276, 279, 279, 277, 278, 278, 280, 282, 285, 272, 279, 278
✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

$$\frac{9}{12} = 0.75 \rightarrow \boxed{75\%}$$

⑥

| Salary per hour | frequency |
|-----------------|-----------|
| \$10 | 200 |
| \$12 | 150 |
| \$20 | 150 |

$$\bar{x} = 13.6$$

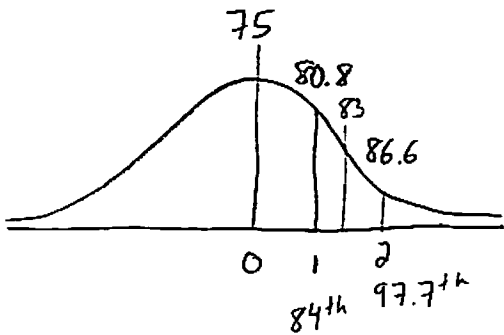
$$\text{Median} = 12$$

$$\text{Mode} = 10$$

Choice (1) mean

1-Var Stats L_1, L_2

⑦



between 84th and 97th percentile

choice (3)

⑧ 1-Var Stats L_1, L_2

$$\bar{x} = 69$$

$$\sigma_x \approx 4.313$$

$$\bar{x} + \sigma_x = 73.313$$

$$\bar{x} - \sigma_x = 64.687$$

| Height | Frequency |
|--------|-----------|
| 62 | 2 |
| 66 | 1 |
| 68 | 2 |
| 72 | 3 |
| 74 | 2 |

$$1 + 2 + 3 = 6$$

⑨ a) third term of $(a - \sqrt{2})^5$

$$5C_2 (a)^3 (-\sqrt{2})^2$$

$$(10)(a^3)(2)$$

$$\boxed{20a^3}$$

b.) middle term of $(3x - y)^6$

$$n = 6 \Rightarrow 7 \text{ terms}$$

$$\begin{matrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ & & & \left(\frac{1}{4} \right) & & & \end{matrix}$$

middle term = 4th term

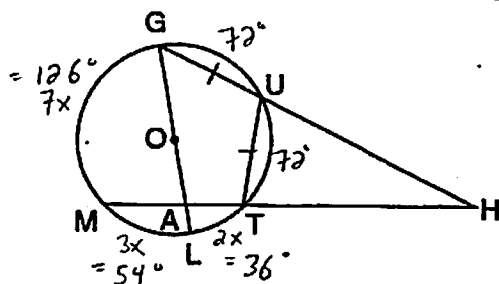
$$6C_3 (3x)^3 (-y)^3$$

$$= (20)(27x^3)(-y^3)$$

$$= \boxed{-540x^3y^3}$$

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Given circle O with diameter \overline{GOAL} ; secants \overline{HUG} and \overline{HTAM} intersect at point H ; $m\widehat{GM}:m\widehat{ML}:m\widehat{LT} = 7:3:2$; and chord $\overline{GU} \cong \text{chord } \overline{UT}$. Find the ratio of $m\angle UGL$ to $m\angle H$.



$m\widehat{GU} = m\widehat{UT}$
since congruent chords
have congruent arcs

$$m\widehat{GU} + m\widehat{UT} + 36 = 180$$

$$m\widehat{GU} + m\widehat{UT} = 144$$

$$\Rightarrow m\widehat{GU} = 72$$

$$m\widehat{UT} = 72$$

$$7x + 3x = 180$$

$$10x = 180$$

$$x = 18$$

$$m\widehat{GM} = 7(18) = 126$$

$$m\widehat{ML} = 3(18) = 54$$

$$m\widehat{LT} = 2(18) = 36$$

$$m\angle UGL = \frac{1}{2}(m\widehat{UTL})$$

$$= \frac{1}{2}(72 + 36)$$

$$= \frac{1}{2}(108)$$

$$= 54$$

$$m\angle H = \frac{1}{2}(m\widehat{GM} - m\widehat{UT})$$

$$= \frac{1}{2}(126 - 72)$$

$$= \frac{1}{2}(54)$$

$$= 27$$

$$\frac{m\angle UGL}{m\angle H} = \frac{54}{27} = \boxed{2}$$