

基北區臺北市立西松高級中學

112 學年度高級中等學校特色招生考試分發入學測驗

「資料判讀」測驗評分向度

2022 Taipei Municipal XiSong High School Special Enrollment Program Examination
for Taipei and Keelung Area Assessment Criteria – Source Analysis

社會科 Individuals and Societies

向度 A — 認識與理解 / Criterion A — Knowledge and Understanding (15)

1-3	運用了有限的相關術語；用極少的描述和／或例證，展示出對內容和概念基本的認識和理解。 Uses limited relevant terminology; demonstrates basic knowledge and understanding of content and concepts with minimal descriptions and/or examples.
4-6	準確和恰當地運用了一些術語；通過尚令人滿意的描述、解釋和例證，展示出對內容和概念尚充分的認識和理解。 Uses some terminology accurately and appropriately; demonstrates adequate knowledge and understanding of content and concepts through satisfactory descriptions, explanations and examples.
7-9	準確和恰當地運用了一系列術語；通過準確的描述、解釋和例證，展示出對內容和概念充實的認識與理解。 Uses a range of terminology accurately and appropriately; demonstrates substantial knowledge and understanding of content and concepts through accurate descriptions, explanations and examples.
10-12	一貫有效地運用了廣泛的術語；通過準確的描述、解釋和例證，展示出對內容和概念有出色的認識和理解。 Consistently uses a wide range of terminology effectively; demonstrates excellent knowledge and understanding of content and concepts through thorough, accurate descriptions, explanations and examples.
13-15	優秀地運用了廣泛的術語；通過非常準確的描述、解釋和例證，展示出對內容和概念有卓越的認識和理解。 Excellently uses a wide range of terminology effectively; demonstrates extraordinary knowledge and understanding of content and concepts through thorough, accurate descriptions, explanations and examples.

向度 B — 交流 / Criterion B — Communicate (15)

1-3	<p>在運用適當受眾和意圖的方式交流信息和思想觀點方面僅做了有限的嘗試；根據具體的交流形式，採用有限的方法組織編排了信息和思想觀點。</p> <p>Communicates information and ideas in a limited way, using a style that is limited in its appropriateness to the audience and purpose; structures information and ideas according to the specified format in a limited way.</p>
4-6	<p>採用基本適合受眾和意圖的方式，尚令人滿意地交流了信息和思想觀點；根據具體的交流形式，採用了基本適當的方法編排信息和思想觀點。</p> <p>Communicates information and ideas satisfactorily by using a style that is somewhat appropriate to the audience and purpose; structures information and ideas in a way that is somewhat appropriate to the specified format</p>
7-9	<p>採用通常適合受眾和意圖的方式，準確地交流了信息和思想觀點；根據具體的交流形式，通常採用了適當的方法編排信息和思想觀點。</p> <p>Communicates information and ideas accurately by using a style that is mostly appropriate to the audience and purpose; structures information and ideas in a way that is mostly appropriate to the specified format.</p>
10-12	<p>採用通常適合受眾和意圖的方式，準確地交流了信息和思想觀點；根據具體的交流形式，通常採用了適當的方法編排信息和思想觀點。</p> <p>Communicates information and ideas effectively and accurately by using a style that is completely appropriate to the audience and purpose; structures information and ideas in a way that is completely appropriate to the specified format.</p>
13-15	<p>採用通常適合受眾和意圖的方式，優秀地交流了信息和思想觀點；根據具體的交流形式，總是採用適當的方法編排信息和思想觀點。</p> <p>Communicates information and ideas excellently and accurately by using a style that is completely appropriate to the audience and purpose; structures information and ideas in a way that is completely appropriate to the specified format.</p>

向度 C — 批判性思考 / Criterion C —Critical thinking (20)

1-4	<p>根據資料之來源和目的，描述了為數不多的原始資料／數據，認識到了其表面價值和局限性；識別了各種不同的觀點，及其非常有限的內涵。</p> <p>Describes a limited number of sources/data in terms of origin and purpose and recognises nominal value and limitations; identifies different perspectives and minimal implications.</p>
5-8	<p>根據資料之來源和目的，對原始資料／數據進行了分析和／或評價，認識到了它們的一些價值和局限性；解讀了不同的觀點，及其某些內涵。</p> <p>Analyses and/or evaluates sources/data in terms of origin and purpose, recognising some value and limitations; interprets different perspectives and some of their implications.</p>
9-12	<p>根據資料之來源和目的，有效地分析和評價了一系列原始資料／數據，通常認識到了它們的價值和局限性；解讀了不同的觀點及其內涵。</p> <p>Effectively analyses and/or evaluates sources/data in terms of origin and purpose, recognising value and limitations; interprets different perspectives and some of their implications.</p>
13-16	<p>根據資料之來源和目的，有效地分析和評價了原始資料／數據，一貫認識到了它們的價值和局限性；透徹地解讀了一系列不同的觀點及其內涵。</p> <p>Effectively analyses and evaluates a range of sources/data in terms of origin and purpose, usually recognising value and limitations; interprets different perspectives and their implications.</p>
17-20	<p>根據資料之來源和目的，優秀地分析和評價了原始資料／數據，自始至終認識到了它們的價值和局限性；優秀地解讀了全方面的觀點及其內涵。</p> <p>Excellently analyses and evaluates a range of sources/data in terms of origin and purpose, thoroughly recognising value and limitations; thoroughly interprets a range of different perspectives and their implications.</p>

第 1 題：共 6 分

(a) $\triangle AZB$ 的面積為 $16 \times 16 \times \frac{1}{2} = \boxed{128}$ 平方單位 [A1]

(b) $\triangle DAE$ 的面積為 $8 \times 8 \times \frac{1}{2} = 32$,

$\triangle GDH$ 的面積為 $4 \times 4 \times \frac{1}{2} = 8$,

所求增加的三角面積為 $2 \times 2 \times \frac{1}{2} = \boxed{2}$ 平方單位 [M2A1]

(c) 總面積為 $128 + 32 + 8 + 2 + \frac{1}{2} + \frac{1}{8} = 170 + \frac{5}{8} = \boxed{\frac{1365}{8}}$ 平方單位 [M1A1]

第 2 題：共 5 分

$\frac{100}{3} = 33 \dots 1$, 則數字 1~100 中, 為 3 的倍數有 33 個。 [A1]

而數字中有 3 的數字有：3, 13, 23, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 43, 53, 63, 73, 83, 93, 共 19 個。 [A1]

其中同時為 3 的倍數的數字有 3, 30, 33, 36, 39, 63, 93, 共 7 個。 [A1]

則所有人共拍 $33 + 19 - 7 = \boxed{45}$ 次。 [A1M1]

第 3 題：共 14 分

(a) 因為 $2\angle BAD = \angle BCD$ 且 $\angle BAD + \angle BCD = 180^\circ$ ，所以 $\angle BCD = \boxed{120^\circ}$ [M1A1]

(b) 因為 $\overline{BC} = \overline{CD}$ ，且 $\angle ABC$ 及 $\angle ADC$ 皆為直角，所以 $\triangle ABC$ 與 $\triangle ADC$ 全等，

因此 $\overline{AB} = \overline{AD} = 4\sqrt{3}$ 公尺。 [M1]

以 P 、 Q 為圓心的圓分別與 \overline{AD} 相切於 R 、 S ，所以 $\overline{AR} = 0.2\sqrt{3}$ ， $\overline{SD} = 0.2$ 。 [M2]

所求 $\overline{PQ} = 4\sqrt{3} - 0.2\sqrt{3} - 0.2 = \boxed{3.8\sqrt{3} - 0.2}$ 公尺。 [A1]

(c) A ， B ， C ， D 四個角落，無法清掃的區域面積分別如下：

$$A = \frac{1}{2} \times 0.2 \times 0.2\sqrt{3} \times 2 - \pi \times 0.2^2 \times \frac{120}{360} \quad [\text{M1}]$$

$$B = 0.2 \times 0.2 - \pi \times 0.2^2 \times \frac{90}{360} \quad [\text{M1}]$$

$$C = \frac{1}{2} \times 0.2 \times \frac{0.2}{\sqrt{3}} \times 2 - \pi \times 0.2^2 \times \frac{60}{360} \quad [\text{M1}]$$

$$D = 0.2 \times 0.2 - \pi \times 0.2^2 \times \frac{90}{360} \quad [\text{M1}]$$

$$\text{所求 } A+B+C+D = \boxed{0.04(2 + \frac{4\sqrt{3}}{3} - \pi)} \text{ 平方公尺}。 \quad [\text{A1}]$$

(d) 因為 $\angle ABC$ 及 $\angle ADC$ 皆為直角，對角互補，

可推知四邊形 $ABCD$ 共圓，且此圓以 \overline{AC} 為直徑， [M2]

所求最小直徑即為 $\overline{AC} = \boxed{8}$ 公尺。 [A1]

第 4 題：共 11 分

- (a) 溶液的特性
- (b) 酶的專一性
- (c) (i) 將唾液加熱、改變唾液 pH 值、加入酒精.....等使蛋白質變性的方法皆正確。
(ii) 唾液變性後會失去活性，無法再進行作用。
- (d) α -澱粉酶、水解酶、脂酶
- (e) (i) 實驗表格

唾液的 pH 值	唾液的體積 (mL)	唾液的溫度 (°C)	清潔力
3			
5			
7			
9			

(ii) 唾液的體積、唾液的溫度、污漬的種類、作用的時間.....等。

第 5 題：共 14 分

- (a) (i) 鋅為負極，銅為正極。
(ii) 負極： $Zn \rightarrow Zn^{2+} + 2e^{-}$ 。正極： $2H^{+} + 2e^{-} \rightarrow H_2$ 。
- (b) 伏特計使用方式應為並聯，因此應連接 AB 兩點。
- (c) 安培計使用方式應為串連，因此應取代 AC 線段。
- (d) (i) 端電壓為縱軸，電流為橫軸，兩物理量為線性關係，且電流越大，端電壓越小，呈現負相關。
(b) 直線方程式為 $V_t = 1.2 - 2.4I$ 。
- (e) 內電阻為 2.4Ω 。
- (f) 理想電壓為 $1.2 V$ 。
- (g) 應串聯 3 個以上的檸檬電池。

Question 1. [Maximum mark: 6]

(a) The area of $\triangle AZB$ is $16 \times 16 \times \frac{1}{2} = \boxed{128 \text{ units}^2}$ [A1]

(b) The area of $\triangle DAE$ is $8 \times 8 \times \frac{1}{2} = 32$;

the area of $\triangle GDH$ is $4 \times 4 \times \frac{1}{2} = 8$;

the next three triangles' area is $2 \times 2 \times \frac{1}{2} = \boxed{2 \text{ units}^2}$. [M2A1]

(c) The total area of the six shaded triangles is $128 + 32 + 8 + 2 + \frac{1}{2} + \frac{1}{8} = 170 + \frac{5}{8} = \boxed{\frac{1365}{8} \text{ units}^2}$ [M1A1]

Question 2. [Maximum marks: 5]

$\frac{100}{3} = 33 \cdots 1$, from 1 to 100, there are 33 multiples of 3. [A1]

The numbers containing the digit 3 are: 3, 13, 23, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 43, 53, 63, 73, 83, 93. In total there are 19 numbers. [A1]

Among these the multiples of 3 are: 3, 30, 33, 36, 39, 63, 93; a total of 7 numbers. [A1]

Therefore, everyone clapped $33 + 19 - 7 = \boxed{45 \text{ times}}$. [A1M1]

Question 3. [Maximum marks: 14]

(a) Because $2\angle BAD = \angle BCD$ and $\angle BAD + \angle BCD = 180^\circ$, we have that $\angle BCD = \boxed{120^\circ}$ [M1A1]

(b) Because $\overline{BC} = \overline{CD}$ and $\angle ABC$ and $\angle ADC$ are right angles, $\triangle ABC \cong \triangle ADC$,
so $\overline{AB} = \overline{AD} = 4\sqrt{3}$ meters. [M1]

The circles with P and Q as centers are tangent to \overline{AD} at R and S , respectively,

so $\overline{AR} = 0.2\sqrt{3}$, $\overline{SD} = 0.2$.

[M2]

Thus the desired length is given by $\overline{PQ} = 4\sqrt{3} - 0.2\sqrt{3} - 0.2 = \boxed{3.8\sqrt{3} - 0.2 \text{ m}}$. [A1]

(c) The areas that cannot be cleaned lie in the corners A , B , C , and D . Their areas are given by:

$$A = \frac{1}{2} \times 0.2 \times 0.2\sqrt{3} \times 2 - \pi \times 0.2^2 \times \frac{120}{360} \quad [\text{M1}]$$

$$B = 0.2 \times 0.2 - \pi \times 0.2^2 \times \frac{90}{360} \quad [\text{M1}]$$

$$C = \frac{1}{2} \times 0.2 \times \frac{0.2}{\sqrt{3}} \times 2 - \pi \times 0.2^2 \times \frac{60}{360} \quad [\text{M1}]$$

$$D = 0.2 \times 0.2 - \pi \times 0.2^2 \times \frac{90}{360} \quad [\text{M1}]$$

The required $A + B + C + D = \boxed{0.04(2 + \frac{4\sqrt{3}}{3} - \pi) \text{ m}^2}$. [A1]

(d) Since $\angle ABC$ and $\angle ADC$ are both right angles they are complementary;

hence it can be deduced that the quadrilateral $ABCD$ can be inscribed in a circle with

diameter \overline{AC} ; [M2]

the minimum diameter is $\overline{AC} = \boxed{8 \text{ m}}$. [A1]

Question 4. [Maximum marks: 11]

- (a) The nature of solvent.
- (b) Enzyme specificity.
- (c) (i) heat saliva, change the pH value of saliva, add alcohol...(all methods for protein denaturation is correct)
- (ii) The denatured saliva will lose the activity.
- (d) α -amylase, hydrolase, and lipase
- (e) (i) table

The pH value of saliva	The volume of saliva (mL)	The temperature of saliva ($^{\circ}\text{C}$)	The cleaning ability
3			
5			
7			
9			

- (ii) the volume of saliva, the temperature of saliva, types of stains, the reaction time.....

Question 5. [Maximum marks: 14]

- (a) (i) Zn acts as the negative electrode and Cu as positive.
- (ii) negative electrode: $\text{Zn} \rightarrow \text{Zn}^{2+} + 2e^{-}$ ◦ positive electrode : $2\text{H}^{+} + 2e^{-} \rightarrow \text{H}_2$ ◦
- (b) The voltmeter should be parallel to the battery. The voltmeter would connect to point A and B.
- (c) The ammeter should be connected to battery in the series. The ammeter would replace the line AC.
- (d) The linear equation is $V_t = 1.2 - 2.4I$.
- (e) The internal resistance of the battery is 2.4Ω .
- (f) The ideal voltage of the battery is 1.2 V.
- (g) Connect 3 more lemon battery in a series.