

考场号

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| 0 | 0 |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
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| 9 | 9 |

座位号

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|---|---|
| 0 | 0 |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
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| 8 | 8 |
| 9 | 9 |

学校: _____ 姓名: _____
 年级: _____ 班级: _____

区七中 2020-2021 学年下学期期中数学

答题卡【七年级 数学】

考生须知

- 考生务必在每张答题卡上将自己的学校、班级、姓名、考场号、座位号等信息填写、填涂清楚。
- 考场号、座位号、选择题必须使用 2B 铅笔填涂；非选择题要书写工整、字迹清楚；切勿在答题区右上角打分框内作答。

正确填涂: ☒

缺考: ☐

违纪: ☐

【教师填涂!】

一、填空题 (共 6 小题, 每小题 3 分, 共 18 分)

- _____ ± 2 _____ 2. _____ 3 _____
3. _____ 80 _____ 4. _____ $-\sqrt{2^7}$ _____ $(-1)^n \cdot \sqrt{2^n}$ _____
5. _____ 12cm^2 _____ 6. _____ $3 < AC < 4$ _____

二、选择题 (共 8 小题, 每小题 3 分, 共 24 分)

- | | | |
|--|---|---|
| 7 <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D | 10 <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D | 13 <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D |
| 8 <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 11 <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D | 14 <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D |
| 9 <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | 12 <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | |

三、解答题 (共 9 小题, 共 58 分)

15 (4 分) $-1^2 - \sqrt[3]{8} - |\sqrt{3} - 2| + \sqrt{(-2)^2} - \sqrt{2^2} + (-1)^{2021}$

解: 原式 $= -1 - 2 - (2 - \sqrt{3}) + 2 - \sqrt{4} - 1$
 $= -1 - 2 - 2 + \sqrt{3} + 2 - \sqrt{3}$
 $= -3$

16 (8 分) (1) $(1 - 3x)^3 = 1000$

解: $1 - 3x = 10$
 $-3x = 9$
 $x = -3$

(2) $2(x^2 + 4) = 16$

解: $x^2 + 4 = 8$
 $x^2 = 4$
 $x = \pm 2$

17 (5 分)

证明: $\because AD \perp BC$

$FG \perp BC$

$\therefore \angle ADG = \angle FGC = 90^\circ$

$\therefore AD \parallel FG$

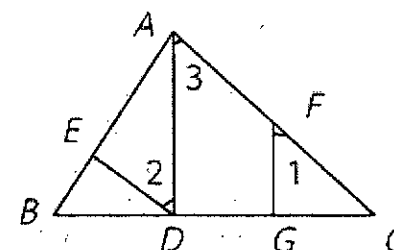
$\therefore \angle 1 = \angle 3$

又 $\because \angle 1 = \angle 2$

$\therefore \angle 2 = \angle 3$

$\therefore ED \parallel AC$

$\therefore \angle BDE = \angle C$



18 (6 分)

(1) 解: \because 一个正数的平方根是 $2a + 1$ 和 $a - 13$.

$\therefore 2a + 1 + a - 13 = 0$ 1 分

$3a = 12$

$a = 4$

$\therefore 2a + 1 = 2 \times 4 + 1 = 9$

\therefore 这个正数为 $(2a + 1)^2 = 9^2 = 81$ 3 分

(2) 当 $a = 4$ 时

$a + 12 = 4 + 12 = 16$ 1 分

$\therefore \sqrt{a + 12} = \sqrt{16} = 4$ 2 分

$\therefore \sqrt{a + 12}$ 的平方根为 $\pm \sqrt{4} = \pm 2$ 3 分

19 (6 分)

解 (1) $\because OE$ 平分 $\angle BOC$

$\therefore \angle COE = \angle BOE = 65^\circ$

$\therefore \angle DOE = 180^\circ - \angle COE$

$= 180^\circ - 65^\circ$

$= 115^\circ$

$\therefore \angle DOE$ 的度数为 115°

(2) $\because \angle BOD : \angle BOE = 2 : 3$

\therefore 设 $\angle BOD = 2x$, $\angle BOE = 3x$

$\therefore \angle COE = \angle BOE = 3x$

又 $\because \angle COE + \angle BOE + \angle BOD = 180^\circ$

$\therefore 3x + 3x + 2x = 180^\circ$

$8x = 180^\circ$

$x = 25^\circ$

$\therefore \angle BOD = 2x = 50^\circ$

又 \because 直线 AB 、 CD 相交于点 O

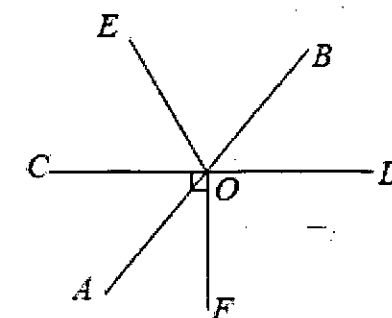
$\therefore \angle BOD = \angle AOC = 50^\circ$

又 $\because OF \perp CD$

$\therefore \angle COF = 90^\circ$

$\therefore \angle AOF = \angle COF - \angle AOC = 90^\circ - 50^\circ = 40^\circ$

$\therefore \angle AOF$ 的度数为 40°



20 (6 分)

解: 在三角形 ABC 中

$\because \angle A + \angle ABC + \angle ACB = 180^\circ$

又 $\because \angle A = 80^\circ$

$\therefore \angle ABC + \angle ACB = 100^\circ$

又 $\because CO$ 、 BO 分别平分 $\angle ACB$, $\angle ABC$

$\therefore \angle OCB = \frac{1}{2} \angle ACB$, $\angle OBC = \frac{1}{2} \angle ABC$

$\therefore 2\angle OCB + 2\angle OBC = 100^\circ$

$\therefore \angle OCB + \angle OBC = 50^\circ$

在三角形 OBC 中

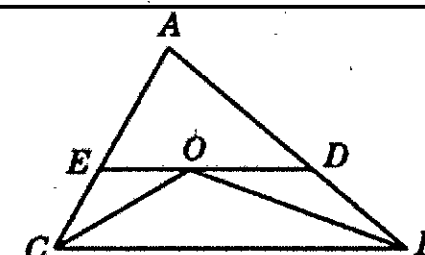
$\because \angle OCB + \angle OBC + \angle BOC = 180^\circ$

$\therefore \angle BOC = 180^\circ - (\angle OCB + \angle OBC)$

$= 180^\circ - 50^\circ$

$= 130^\circ$

$\therefore \angle BOC$ 的度数为 130°



21 (8分)

解: (1) $A_1(-2, 5)$

$B_1(2, 3)$

$C_1(-3, 2)$

(2) 过点A作 $DE \parallel x$ 轴

过点C作 $CD \parallel y$ 轴

过点B作 $BE \parallel y$ 轴

CD与AE交于点D,

BE与AE交于点E

$\therefore CD=3$

$DE=5$

$BE=2$

$\therefore S_{\triangle ABC} = S_{\text{梯形} BEPC} - S_{\triangle ADC} - S_{\triangle ABE}$

$$= \frac{(2+3) \times 5}{2} - \frac{1}{2} \times 3 \times 1 - \frac{1}{2} \times 2 \times 5$$

$$= \frac{25}{2} - \frac{3}{2} - \frac{10}{2}$$

$$= 6$$

\therefore 三角形ABC的面积为6.

(3) 设点P(0, y) $\therefore AP = |y-2|$

$\therefore S_{\triangle PAB} = S_{\triangle ABC}$

$$\therefore \frac{1}{2} AP \times |xB| = 6$$

$$\frac{1}{2} |y-2| \times 4 = 6$$

$$|y-2| = 3$$

$$\therefore y-2 = \pm 3$$

当 $y-2=3$ 时

$$y=5$$

$$\therefore P_1(0, 5)$$

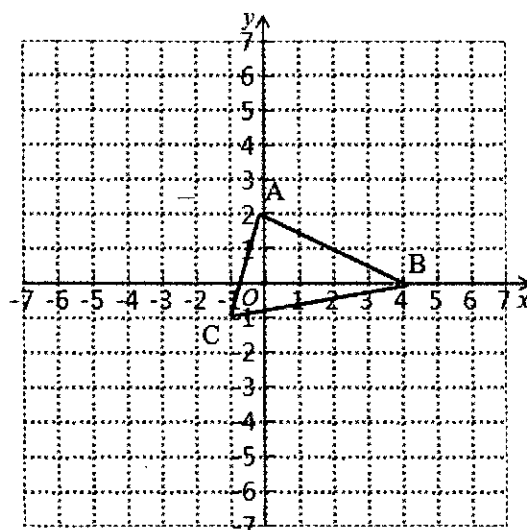
当 $y-2=-3$ 时

$$y=-1$$

$$\therefore P_2(0, -1)$$

综上所述

$P_1(0, 5)$ 或 $P_2(0, -1)$

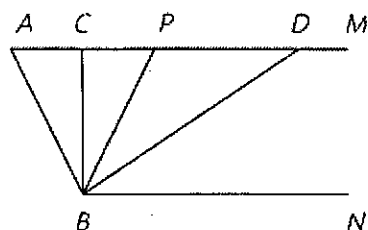


22 (6分)

解: (1) $\because AM \parallel BN$

$$\therefore \angle A + \angle ABN = 180^\circ$$

又 $\because BC, BD$ 分别平分 $\angle ABP$,



$\angle PBN$

$$\therefore \angle CBP = \frac{1}{2} \angle ABP, \angle PBD = \frac{1}{2} \angle PBN$$

$$\text{又} \because \angle ABP + \angle PBN = \angle ABN = 180^\circ - \angle A = 120^\circ$$

$$\therefore 2\angle CBP + 2\angle PBD = 120^\circ$$

$$\therefore \angle CBP + \angle PBD = 60^\circ$$

$$\therefore \angle CBD = \angle CBP + \angle PBD = 60^\circ$$

$$\therefore \angle CBD \text{ 的度数为 } 60^\circ$$

(2) 当点P运动时, $\angle APB = 2\angle ADB$ 不变, 理由:

$AM \parallel BN$

$$\angle APB = \angle PBN$$

$$\text{又} \because \angle ADB = \angle DBN = \frac{1}{2} \angle PBN$$

$$\therefore \angle APB = 2\angle DBN = 2\angle PDB$$

$$\therefore \angle APB = 2\angle ADB$$

23 (9分)

解: (1) 如图所示

\therefore 过点A(0, 4)的

直线a垂直于y轴,

点P在直线a上, 点

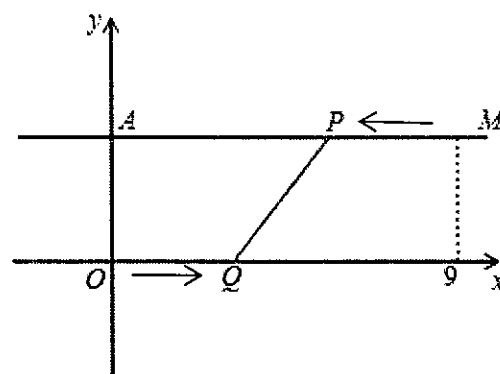
Q在x轴上.

\therefore 点P的纵坐标为4,

点Q的纵坐标为0.

又 \because 点M的坐标为(9, 4)

$$\therefore P(9-2t, 4), Q(t, 0)$$



(2) 当P, Q两点在垂直于x轴的同一条直线上时, $AP=OQ$

$$\therefore 9-2t=t$$

$$t=3$$

\therefore 当 $t=3$ 秒时, P, Q两点在垂直于x轴的同一条直线上.

(3) \because 点A的坐标为(0, 4)

$$\therefore OA=4$$

① 当点P在y轴右侧时

$$S_{\text{四边形} AOQP} = (9-2t+t) \times 4 \times \frac{1}{2} = 10$$

$$t=4$$

$$\therefore \text{当 } t=4 \text{ 时, } 9-2t=1$$

$$\therefore P_1(1, 4)$$

② 当点P在y轴左侧时

$$S_{\text{四边形} APOQ} = (2t-9+t) \times 4 \times \frac{1}{2} = 10$$

$$t = \frac{14}{3}$$

$$\therefore \text{当 } t = \frac{14}{3} \text{ 时, } 9-2t = -\frac{1}{3}$$

$$\therefore \text{点 } P_2 \text{ 的坐标为 } (-\frac{1}{3}, 4)$$

综上所述: $P_1(1, 4)$ 或 $P_2(-\frac{1}{3}, 4)$

密封线内不要答题