

太原市第五十六中学校

2020—2021 学年第二学期七年级第二次月考

数学参考答案

一、选择题（每小题 3 分，共 30 分）

题号	1	2	3	4	5	6	7	8	9	10
答案	A	D	B	B	A	D	C	D	C	C

二、选择题（每小题 3 分，共 15 分）

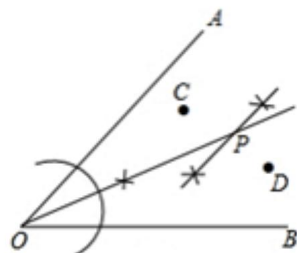
11. 60° 12. 三角形具有稳定性 13. 7 14. 25m 15. 8

三、解答题（每小题 3 分，共 15 分）

16. 作图略

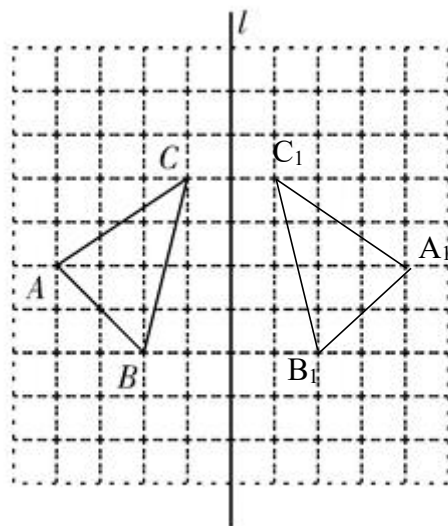
结论： $\therefore \triangle DEF$ 就是所求作的三角形

17.



结论： \therefore 点 P 就是所求作的点

18. (1)



结论： $\therefore \triangle A_1B_1C_1$ 就是所求作三角形

(2) 四边形 BB_1C_1C 的面积为： $(2+4) \times 4 \div 2 = 12$

$$19. \because \angle BAE = \angle DAC$$

$$\therefore \angle BAE + \angle EAC = \angle DAC + \angle EAC$$

$$\therefore \angle BAC = \angle DAE$$

$$\text{在 } \triangle ABC \text{ 和 } \triangle ADE \text{ 中 } \begin{cases} \angle B = \angle D \\ AB = AD \\ \angle BAC = \angle DAE \end{cases}$$

$$\therefore \triangle ABC \cong \triangle ADE (\text{ASA})$$

$$\therefore AC = AE$$

$$20. \because AD \perp BC$$

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

$$\text{在 Rt } \triangle ADE \text{ 中, } \angle DAE = 10^\circ$$

$$\therefore \angle AED = 90^\circ - \angle DAE = 80^\circ$$

$$\text{在 } \triangle ABE \text{ 中, } \angle BAE + \angle B + \angle AEB = 180^\circ$$

$$\because \angle B = 60^\circ$$

$$\therefore \angle BAE = 40^\circ$$

$$\because AE \text{ 平分 } \angle BAC$$

$$\therefore \angle BAC = 2\angle BAE = 80^\circ$$

$$\text{在 } \triangle ABC \text{ 中, } \angle B + \angle BAC + \angle C = 180^\circ$$

$$\therefore \angle C = 40^\circ$$

21. (1) **依据 1:** 等腰三角形顶角的平分线、底边上的中线、底边上的高重合(也称“三线合一”)

依据 2: 角平分线上的点到这个角的两边的距离相等.

$$(2) \because AC = BC$$

$$\therefore \angle A = \angle B$$

$$\because DF \perp AC, DE \perp BC$$

$$\therefore \angle OMA = \angle ONB = 90^\circ$$

∵ O 是中点

$$\therefore OA = OB$$

$$\text{在 } \triangle AOM \text{ 和 } \triangle BON \text{ 中 } \begin{cases} \angle OMA = \angle ONB \\ \angle A = \angle B \\ OA = OB \end{cases}$$

$$\therefore \triangle AOM \cong \triangle BON (\text{AAS})$$

$$\therefore OM = ON$$

22. (1)

$$\because \angle BAC = 90^\circ$$

$$\therefore \angle CAE + \angle BAD = 180^\circ - \angle BAC = 90^\circ$$

$$\because BD \perp l$$

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

$$\therefore \angle BAD + \angle ABD = 90^\circ$$

$$\therefore \angle CAE = \angle ABD$$

$$\because CE \perp l$$

$$\therefore \angle CEA = \angle ADB = 90^\circ$$

$$\text{在 } \triangle ABD \text{ 和 } \triangle CAE \text{ 中 } \begin{cases} \angle CEA = \angle ADB \\ \angle CAE = \angle ABD \\ AC = AB \end{cases}$$

$$\therefore \triangle CAE \cong \triangle ABD (\text{AAS})$$

$$\therefore AE = BD, CE = AD$$

$$\because DE = DA + AE$$

$$\therefore DE = BD + CE$$

(2) 成立

$$\because \angle BAC = \alpha$$

$$\therefore \angle CAE + \angle BAD = 180^\circ - \angle BAC = 180^\circ - \alpha$$

$$\because \angle BDA = \alpha$$

$$\therefore \angle BAD + \angle ABD = 180^\circ - \angle BDA = 180^\circ - \alpha$$

$$\therefore \angle CAE = \angle ABD$$

$$\text{在 } \triangle ABD \text{ 和 } \triangle CAE \text{ 中} \begin{cases} \angle CEA = \angle ADB \\ \angle CAE = \angle ABD \\ AC = AB \end{cases}$$

$$\therefore \triangle CAE \cong \triangle ABD (\text{AAS})$$

$$\therefore AE = BD, CE = AD$$

$$\therefore DE = DA + AE$$

$$\therefore DE = BD + CE$$

(3) 如图，过点 E 作 $EM \perp HI$ 于点 M，作 $GN \perp HI$ 的延长线于点 N

$$\text{则 } \angle EMI = \angle GNI = 90^\circ$$

由 (1) (2) 的结论可知 $EM = AH = GN$

$$\therefore EM = GN$$

$$\text{在 } \triangle EMI \text{ 和 } \triangle GNI \text{ 中} \begin{cases} \angle GIN = \angle EIM \\ \angle EMI = \angle GNI \\ EM = GN \end{cases}$$

$$\therefore \triangle EMI \cong \triangle GNI (\text{AAS})$$

$$\therefore EI = GI$$

$\therefore I$ 是 EG 的中点

