

七年级数学答案

一、选：

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

二、填：

11. 平行, 12. ~~138°~~ 138° 或 42° 13. 2cm. 14. 6.

三、解答：

15. 由题可得：

$$4 < c < 10$$

$$3-a=0, 7b=0.$$

又：c为偶数，

$$\therefore a=3, b=7,$$

$$\therefore c=6, 8,$$

由三角形三边关系，

16. 解：设较小锐角为x，另一个为 $(90^\circ - x)$

$$\therefore 90^\circ - x - 3x = 10^\circ.$$

$$\therefore 4x = 80.$$

$$x = 20.$$

$$\therefore 90^\circ - x = 70^\circ.$$

17. 解：

18. 证明： $\because CF = DE.$

又： $AC \parallel BD$

$$\therefore CF + EF = DE + EF,$$

$$\therefore \angle C = \angle D.$$

$$\therefore CE = DF.$$

在 $\triangle AEC$ 和 $\triangle BFD$ 中，

$$\begin{cases} \angle A = \angle B. \\ \angle C = \angle D. \\ CE = DF. \end{cases}$$

$$\therefore \triangle AEC \cong \triangle BFD.$$

$$\therefore AE = BF.$$

$$\therefore \triangle AEC \cong \triangle BFD \text{ (AAS)}$$

19.

解: $\because BD$ 平分 $\angle ABC$,
 CD 平分 $\angle ACB$,

$$\therefore \angle 1 = \angle 2, \angle 3 = \angle 4,$$

在 $\triangle ABC$ 中,

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

$$\therefore \angle A + 2(\angle 2 + \angle 4) = 180^\circ.$$

$$\therefore \angle 2 + \angle 4 = 90^\circ - \frac{1}{2}\angle A.$$

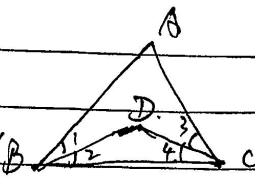
在 $\triangle BDC$ 中,

$$\angle 2 + \angle 4 + \angle BDC = 180^\circ.$$

$$\therefore \angle BDC = (180^\circ - (\angle 2 + \angle 4))$$

$$= 180^\circ - 90^\circ + \frac{1}{2}\angle A.$$

$$\therefore \angle BDC = 90^\circ + \frac{1}{2}\angle A.$$



21. ① 解: $\because MN \perp AB$, $AD = BD$,

$$\therefore AE = BE.$$

$$\therefore \angle A = \angle C,$$

$$\therefore \angle BCE = \angle BAE + \angle CBE,$$

$$\therefore \angle C = \angle A + \angle C + \angle B.$$

$$25 = 15 + \angle B$$

$$\therefore \angle B = 10^\circ.$$

② 证明: 由①得出 $\angle A = \angle C = 36^\circ$.

$\therefore \angle 1$ 是 $\triangle ABE$ 的外角.

$$\therefore \angle 1 = \angle A = 72^\circ.$$

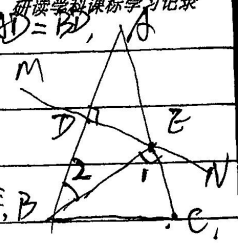
在 $\triangle BEC$ 中, $AB = AC$.

$$\therefore \angle C = (180^\circ - \angle A) \div 2.$$

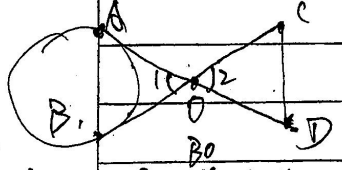
$$= 72^\circ.$$

$$\therefore \angle 1 = \angle C.$$

$$\therefore BE = CE.$$



20.



解: 找一点 O, 连接 OA, OB, OC, OD, E,

使 $AO = DO$, $BO = CO$.

测量 O 即为 AB 的中点.

证: 在 $\triangle AOB$ 和 $\triangle DOC$ 中,

$$\begin{cases} AO = DO \\ \angle 1 = \angle 2 \\ BO = CO \end{cases}$$

$$\therefore \triangle AOB \cong \triangle DOC \text{ (SAS)}$$

$$\therefore AB = CD.$$

22. ①. 在 $\triangle AEC$ 和 $\triangle ADB$ 中,

$$\begin{cases} AE = AD \\ \angle EAC = \angle BAD = 90^\circ \\ AC = AB \end{cases}$$

$$\therefore \triangle AEC \cong \triangle ADB \text{ (SAS)}$$

$$\therefore BD = CE.$$

②. $\because \triangle AEC \cong \triangle ADB$.

$$\therefore \angle ACE = \angle DBA.$$

在 $\triangle ABC$ 中:

$$\angle ACB + \angle ABC = 90^\circ.$$

$$\therefore \angle FCB + \angle FBC = 90^\circ.$$

$$\therefore \angle BFC = 90^\circ.$$

③. 证明:

由等腰 $\triangle ABC$, $\triangle ADE$.

$\therefore AD=AE$, $\angle 2=\angle 3=90^\circ$, $AC=AB$.

又 $\angle 2+\angle 1=\angle 3+\angle 1$

$\therefore \angle EAC=\angle DAB$.

$\therefore \triangle EAC \cong \triangle DAB$ (SAS)

$\therefore EC=BD$.

$\therefore \triangle ABC$ 中,

$\angle 7+\angle 5+\angle 8=90^\circ$.

又 $\triangle EAC \cong \triangle DAB$,

$\therefore \angle 6=\angle 5$.

$\therefore \angle 7+\angle 6+\angle 8=90^\circ$.

在 $\triangle CFB$ 中,

$\therefore \angle CFB=90^\circ$.

