202404上海中考数学模拟卷04参考答案

班级________ 姓名________ 学号________

适合九年级第二学期数学中考复习

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一、选择题

1、(**C**)　2、(**D**)　3、(**C**)　4、(**D**)　5、(**B**)　6、(**D**)

二、填空题

7、$1-x$　8、$\frac{1}{3}\vec{b}-\frac{2}{3}\vec{a}$　9、$x=4$　10、1.73×10^5　11、$\frac{3\sqrt{10}}{10}$

12、$\frac{19+23}{2}=21$　(偶数个数,取中间两个数的平均数)

13、$100(1-m)^2=100(m-1)^2$

14、$16=48\div3, S_1=S_2+2ab, S_3=S_2-2ab, \frac{1}{2}ab=S_{Rt\Delta AEH}$

15、$\frac{\sqrt{13}}{2}$

解：延长AB交$A'D'$于点U,

$\because \angle A'=\angle A, \angle UBA'=\angle CBA, \angle A+\angle CBA=90^\circ \therefore BU\perp A'D'$, 又 $\sin A=\frac{3}{5}, \cos A=\frac{4}{5}, A'B=AC-BC=1$

$\therefore BU=A'B\cdot\sin A=\sin A, UA'=A'B\cdot\cos A=\cos A, \because AD=DB=\frac{1}{2}AB=\frac{5}{2}, A'D'=AD \because BD'^2=BU^2+(\frac{5}{2}-UA')^2=\sin^2 A+(\frac{5}{2}-\cos A)^2$

$=1+\frac{25}{4}-5\times\frac{4}{5}=\frac{13}{4}$ 答：$BD'=\frac{\sqrt{13}}{2}$

16、$125°$　$(=90^\circ+\frac{1}{2}\angle A)$

17、4

解：$\because Rt\triangle BFS\sim Rt\triangle BDC \therefore FS:CD=BF:BD$, 其中 $CD^2=FD^2-FC^2=BF^2-FC^2=4^2-2^2=12, BD^2=BC^2+CD^2=6^2+12=48, BF=ED=\frac{2}{3}\times AD=4, FC=AE=6-4=2, \therefore FS=\frac{CD\cdot BF}{BD}=\frac{\sqrt{12}\times4}{\sqrt{48}}=2$ 答：$EF=2FS=4$

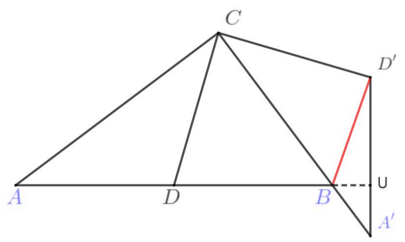
18、$\frac{4}{5}=0.8$

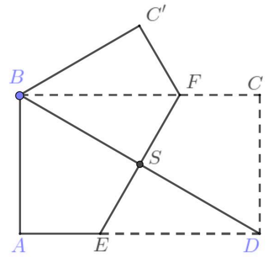
解：作 $OH\perp BC, \angle C=60^\circ, BC$ 与 圆O 相交于点D,

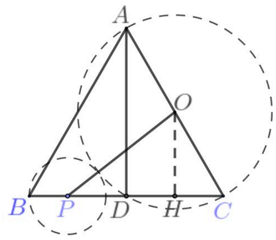
连接O,P, $\because \odot P$与$\odot O$外切, 设$PB=r$, 则 $OP=2+r, OC=2, HC=1, OH^2=3$;

由勾股定理($Rt\triangle POH$): $OP^{=}PH^2+OH^2$

$(2+r)^2=(3-r)^2+3\Rightarrow r=\frac{4}{5}=0.8$







第15题图　　第17题图　　第18题

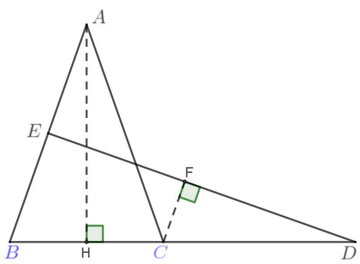
三、解答题

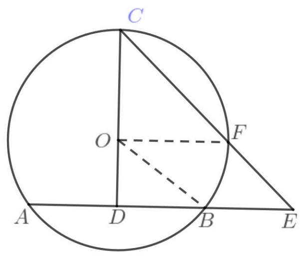
19、-2

20、(1) 点 A 表示: 2天大约记忆量保持了 27.8%;
(2) A;　(3) 如果一天不复习,记忆量保持 33.7%, 减少了 $100\% - 33.7\% = 66.3\%$;
学习计划有:(不唯一)
① 每天上午,下午和晚上各复习30分钟;
② 坚持每天复习,劳逸结合.

21、(1) 作 $AH \perp BC$, 如图21.
$\because \angle ABH = \angle DBE$
$\therefore \mathrm{Rt}\triangle ABH \sim \mathrm{Rt}\triangle DBE$
$\therefore BH : BE = AB : DB, DB = \dfrac{3 \times 6}{2} = 9$
$\therefore CD = DB - BC = 9 - 4 = 5$

(2) 作$CF \perp ED$, 垂足为 F, 如图21.
$\because BE \perp ED, CF \perp ED \therefore BE \parallel CF$
$\therefore \mathrm{Rt}\Delta DCF \sim \mathrm{Rt}\Delta DBE$
$\therefore CF : BE = CD : BD \Rightarrow CF = \dfrac{BE \cdot CD}{BD} = \dfrac{3 \times 5}{4+5} = \dfrac{5}{3}$





第21题图　　第22题图

22、设$\odot O$ 的半径为r,
(1) 连接 OB, 在 $\mathrm{Rt}\triangle OBD$ 中,勾股定理可得
$OB^2 = OD^2 + DB^2$　其中 $OD = CD - OC = 8 - r, DB = \dfrac{1}{2}AB = 4, OB = r$
解得 $r = 5$

(2) 连接OF, $\because OC = OF = r \therefore \Delta OCF$ 为等腰三角形,如图22.
故$\angle CFO = \angle OCF = 45^\circ, \therefore \angle COF = 90^\circ$

$\therefore OF \parallel AB \Rightarrow OF : DE = CF : CE$, 其中 $OF : DE = 5 : 8, CE = CF + FE$,
$\therefore \dfrac{CF}{FE} = \dfrac{CE}{CE - CF} = \dfrac{OF}{DE - OF} = \dfrac{5}{8-5} = \dfrac{5}{3}$

23、(1) $\because$ 菱形 $ABCD$, $\therefore AD = CD, \angle DAC = \angle DCA, DB \perp AC, DO = BO$
$\because DH \perp AB$, $\therefore \mathrm{Rt}\triangle DBH$ 的斜边上的中线 $HO = DO = BO$,
$\therefore \angle OHB = \angle OBH$
$\because DC \parallel AB \therefore \angle OBH = \angle ODC$
$\because \angle DHO + \angle OHB = \angle ODC + \angle OCD = 90^\circ$, $\therefore \angle DHG = \angle OCD$;

(2) $\triangle OEH$ 和 $\triangle OGC$ 中:
$\because \angle EHO = \angle GCO$(已证), $\angle EOH = \angle GOC$(对顶角相等)
$\therefore \triangle OEH \sim \triangle OGC \quad (\mathbf{AAA})$ 同样, $\triangle OEH$ 和 $\triangle DEA$ 中:
$\because \angle EHO = \angle GCO = \angle EAD$(已证), $\angle OEH = \angle DEA$(对顶角相等)
$\therefore \triangle OEH \sim \triangle DEA \quad (\mathbf{AAA})$

$\therefore \triangle OGC \sim \triangle DEA \Rightarrow OG : DE = CG : AE$
即 $OG \cdot AE = DE \cdot CG$

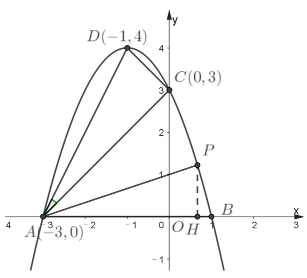
24、(1) $A(-3,0), C(0,3)$ 代入抛物线方程 $y = -x^2 + bx + c$ 得到 $c = 3, b = -2$
抛物线表达式为 $y = -x^2 - 2x + 3$
顶点D 坐标为 $(-1,4)$;

(2) $\triangle ACD$ 中,$AC^2 = 18, AD^2 = 20, CD^2 = 2$; $\therefore AC^2 + CD^2 = AD^2$
由勾股逆定理可得 $\angle DCA = 90^\circ, \tan\angle DAC = \dfrac{DC}{AC} = \sqrt{\dfrac{2}{18}} = \dfrac{1}{3}$;

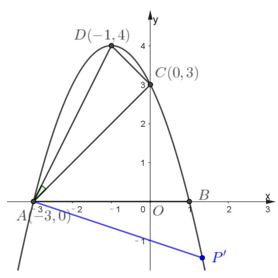
(3) $\because \angle PAB = \angle DAC, \tan\angle DAC = \dfrac{1}{3}$,
(3-1) 故可以设点$P(3h-3, h)$. 如图24-1.
将点P的坐标代入抛物线表达式中,得到 $h = -(3h-3)^2 - 2(3h-3) + 3$
解得 $h = \dfrac{11}{9} \therefore P(\dfrac{2}{3}, \dfrac{11}{9})$, 抛物线对称轴 $x = -1$,, 平移单位为 $m = 2(1 + \dfrac{2}{3}) = \dfrac{10}{3}$;

(3-2) 也可能P关于x 轴的对称点与A 点连线交抛物线于点P',
因为P'在原抛物线上,不妨设 $P'(a, -a^2 - 2a + 3), (a > 0)$, 如图24-2.
$\because \tan\angle P'AB = \dfrac{1}{3}, \therefore a + 3 = -3(-a^2 - 2a + 3), 3a^2 + 5a - 12 = 0, a = \dfrac{4}{3}$,
平移距离为 $m = 2(\dfrac{4}{3} + 1) = \dfrac{14}{3}$

综上, 平移距离有 $\dfrac{10}{3}, \dfrac{14}{3}$.



第24题图1



第24题图2

25、(1) 作 $AQ\perp BC$, 垂足为Q,如图25-1.

$\because \angle B=45^\circ, AQ\perp BQ, AB=\sqrt{2}, \therefore AQ=BQ=1, QD=BD-BQ=x-1$

在$\mathrm{Rt}\triangle ADQ$ 中,由勾股定理得 $AD^2=AQ^2+QD^2 \implies y^2=1^2+(x-1)^2$

$\therefore y=\sqrt{x^2-2x+2}$

$AC^2=AQ^2+QC^2 \implies AC=\sqrt{1^2+(3-1)^2}=\sqrt{5};$

(2) 设AC 交FD 于点G, 连接 FD, 如图25-2.

$\because \widehat{FE}=\widehat{ED} \therefore AE$ 垂直平分FD, (垂径定理)

$\because \angle DAF=90^\circ, \therefore AG=FG=GD=a, AD=AF=\sqrt{2}a, FD=2a, \angle DAC=45^\circ,$

在$\triangle ABC$ 和 $\triangle DAC$ 中:

$\angle B=\angle DAC=45^\circ, \angle BCA=\angle ACD$

$\therefore \triangle ABC\sim\triangle DAC \quad (\mathbf{AAA})$

$\therefore AB:DA=BC:AC, \sqrt{2}:\sqrt{2}a=3:\sqrt{5}, a=\dfrac{\sqrt{5}}{3}, AD=\dfrac{\sqrt{10}}{3},$

$QD=\sqrt{AD^2-AQ^2}=\dfrac{1}{3}, BD=1+\dfrac{1}{3}=\dfrac{4}{3}, DC=BC-BD=3-\dfrac{4}{3}=\dfrac{5}{3},$

$\therefore BD:CD=\dfrac{4}{3}:\dfrac{5}{3}=4:5=\dfrac{4}{5}$

(3) $ADCF$为梯形,分两种情况:

(3-1) $AF\parallel DC$ 时, $\because AD\perp AF \therefore AD\perp DC$, 即(1)中的$Q$与$D$从重合.

$BD=BQ=1;$

(3-2) $AD\parallel FC$ 时,作 $DH\perp FC$, 垂足为 H; $ADHF$ 为正方形, 设 $QD=x$, 则$AD=DH=\sqrt{1+x^2}$.

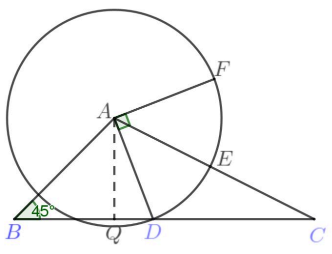
$\because AD\parallel FC \therefore \angle ADQ=\angle HCD,$

$\therefore \mathrm{Rt}\triangle ADQ\sim\mathrm{Rt}\triangle DCH \quad (\mathbf{AAA})$

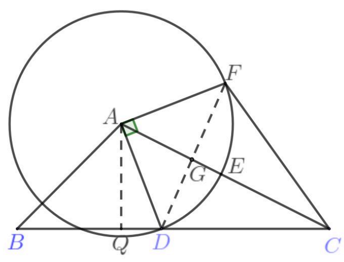
$\therefore AQ:DH=AD:DC \implies 1:AD=AD:(2-x)$

$1+x^2=2-x, x^2+x-1=0, x=\dfrac{-1+\sqrt{5}}{2}$,(负根舍去)

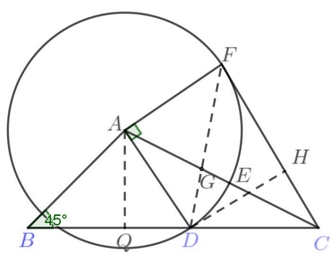
$\therefore BD=1+x=\dfrac{1+\sqrt{5}}{2}$(黄金分割比)



第25题图1



第25题图2



第25题3