

門 二 2
號 3471
卷 2



(6)

$$x = \frac{1}{2}x + 20$$

$$12x = x + 240$$

$$11 \overline{) 11x = 240}$$

$$x = 21 \frac{9}{11}$$

答 二十一分九
千後四時後

(7)

$$\frac{120+x}{12} = \frac{53+x}{7}$$

$$12 \times 7$$

$$840 + 7x = 660 + 72x$$

$$12x - 7x = 840 - 660$$

$$5x = 180$$

$$x = 36$$

答 三十六圓 = 尺

(8)

正ヨ日迄
手リ銀テ = $12 - \frac{76}{2} = 4$

日ヨ分迄
出リ時テ = $x - 4$

全ヨ日迄
時リ改テ = $16 - (x - 4)$

答 十時

$$x = \frac{1}{3}(x-4) + \frac{4}{5}(16-x+4)$$

$$13x = 5x - 20 + 192 - 12x + 48$$

$$22 \overline{) 22x = 220}$$

$$x = 10$$

(1)

$$3x - 11 = 7$$

$$3x = 1 + 11$$

$$3 \overline{) 3x = 12}$$

$$x = 4$$

答 四個

(2)

$$x - \frac{1}{2}x - \frac{1}{3}x = 4$$

$$6x - 3x - 2x = 24 \quad | \times 6$$

$$x = 24$$

答 二丈四尺

(3)

$$x = \frac{56(7.5-5)}{9.5-7.5}$$

$$x = \frac{56 \times 2.5}{2} = 70$$

答 七十坪

(4)

$$x + 25 + 5 = 6x$$

$$x + 30 = 6x$$

$$6x - x = 30$$

$$5 \overline{) 5x = 30}$$

$$x = 6$$

答 六歳

(5)

$$\frac{x-12}{4} = (x-57)$$

$$x-12 = 4x-228 \quad | \times 4$$

$$x-4x = 12-228$$

$$-3 \overline{) 3x = -216}$$

$$x = 72$$

答 各貯金七十二圓

早稲田大學圖書館
31.6.28
藏書

(18) 答
 $248 - x - 5 - 34 = x + 5$
 $2x = 248 - 5 - 34 - 5$
 $2x = 204$
 $x = 102$

(19) 答
 $x - (\frac{1}{3}x + 2) = \frac{1}{2}x$
 $6x - 2x - 12 = 3x$
 $6x - 2x - 3x = 12$
 $x = 12$

(17) 答
 甲 = $3x$ 乙 = $4x$ 丙 = $57 - 7x$
 $7x : 57 - 7x = 14 : 5$
 $7x \times 5 = 14(57 - 7x)$
 $35x = 798 - 98x$
 $35x + 98x = 798$
 $133x = 798$
 $x = 6$
 $3 \times 6 = 18$
 $4 \times 6 = 24$
 $57 - 42 = 15$

丙 乙 甲
 十 二 十
 五 十 八
 圓 圓 圓

(20) 答
 $\frac{4x}{13} = \frac{3(x - 34 - \frac{98}{3})}{7}$
 $\frac{4x}{13} = \frac{3x - 102 - 98}{7}$
 $28x = 39x - 1326 - 1274$
 $28x - 39x = -2600$
 $-11x = -2600$
 $x = 236 \frac{4}{11}$

(20) 答
 月午時火ノ十
 曜後ヨ曜午時 = 14
 日八ノ日前進
 $3:7 = 14:x$
 $x = \frac{98}{3}$
 $13:4 = x:$
 $= \frac{4x}{13}$
 $7:3 = x - 34 - \frac{98}{3}$
 $= \frac{3(x - 34 - \frac{98}{3})}{7}$

(12) 答
 馬 = x 具 = $3x$ 車 = $x + 20$
 $x + 3x + x + 20 = 320$
 $5x = 300$ $x = 60$
 $60 \times 3 = 180$
 $60 + 20 = 80$

車 具 馬
 八 百 六
 十 十 十
 八 十 八
 十 十 十

(13) 答
 $\frac{74 - 7x}{12} = \frac{50 - 5x}{8}$
 $8(74 - 7x) = 12(50 - 5x)$
 $592 - 56x = 600 - 60x$
 $4x = 8$ $x = 2$

妻 子 貳 匁

(14) 答
 $\frac{3}{5} + \frac{2}{3} + \frac{7}{11} = \frac{36}{x}$
 $99x + 110x + 105x = 3940$
 $314x = 3940$ $x = 12 \frac{144}{157}$

七 十 六
 分 時 百
 百 五 十
 十 十 十

(15) 答
 $720 + 1.50(30 - x) = 156$
 $120 + 45 - 1.5x = 156$
 $1.5 \mid 1.5x = 9$
 $x = 6$

六 八

(16) 答
 $8x + 5 = 5x + 2 + 18$
 $8x - 5x = 2 + 18 - 5$
 $3x = 15$ $x = 5$
 $5 \times 5 + 2 = 27$
 $5 \times 8 + 5 = 45$

橘 密 童
 四 相 子
 十 二 五
 五 十 七
 十 十 人

(9) 答
 $\frac{3}{8}(12 - x)4 = 12 + 4 - \frac{1}{2}x$
 $12(12 - x) = 96 + 32 - 4x$
 $144 - 12x = 128 - 4x$
 $-12x + 4x = -144 + 128$
 $-8x = -16$
 $x = 2$

二 時

(10) 答
 $\frac{1}{3}(5x + 6) + 2x = 21$
 $5x + 6 + 6x = 63$
 $11x = 63 - 6$
 $11x = 57$
 $x = 5 \frac{2}{11}$

五 圓 十 一 分 二

(11) 答
 $\frac{x+7}{2} - 7 = \frac{x-7}{4} + 7$
 $2x + 14 - 28 = x - 7 + 28$
 $2x - x = 28 + 28 - 7 - 14$
 $x = 35$
 $\frac{35-7}{4} + 7 = 11$
 $= \frac{28}{4} + 7 = 14$

姊 三 十 五 歲
 妹 十 四 歲

羊年

(26)

$$\left(\frac{1}{2}x - 800\right) + \left(\frac{1}{4}x + 120\right) + \frac{1}{2}\left(\frac{1}{2}x - 800\right) + \frac{2}{3}\left(\frac{1}{4}x + 120\right) = x$$

$$\frac{1}{2}x - 800 + \frac{1}{4}x + 120 + \frac{1}{4}x - 800 + \frac{2}{3}x + \frac{240}{3} = x$$

$$2x = 12000 \quad x = 6000$$

| | | | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----|----|----|----|----|
| $\frac{26000}{3000}$ | $\frac{46000}{1500}$ | $\frac{26000}{3000}$ | $\frac{46000}{1500}$ | 四子 | 三子 | 二子 | 長子 | 家財 |
| $\frac{-800}{2200}$ | $\frac{+120}{1620}$ | $\frac{-800}{2200}$ | $\frac{+120}{1620}$ | 一 | 一 | 十 | 二十 | 六 |
| | | $\frac{2200}{1100}$ | $\frac{1620}{1590}$ | 千 | 千 | 六 | 千 | 千 |
| | | | $\frac{1590}{1080}$ | 十 | 百 | 百 | 元 | 元 |
| | | | | 元 | 元 | 元 | 元 | 元 |

(29)

$$100:6 = x:10: x-12$$

$$100x - 1200 = 60x$$

$$40x = 1200$$

$$x = 30$$

(27)

| | | | | |
|-----|-------------------------|--------|--------|----|
| 答 | 女 = x | 男 = 3x | 母 = 6x | 答 |
| 三十圓 | $6x + 9x + 2x = 8892.7$ | | | 女 |
| | $17x = 8892.7$ | | | 男 |
| | $x = 523.1$ | | | 母 |
| | | | | 三千 |
| | | | | 五百 |
| | | | | 百三 |
| | | | | 六圓 |
| | | | | 三錢 |
| | | | | 十錢 |

(30)

$$150:x-60 = 240:x+180$$

$$150x + 27000 = 240x - 14400$$

$$240x - 150x = 27000 + 14400$$

$$90x = 41400$$

$$x = 460$$

(28)

| | | |
|-------|---------------------------------|----|
| 答 | $40(45-x) + 30x = 36 \times 45$ | 答 |
| 四百六十錢 | $1800 - 40x + 30x = 1620$ | 六樽 |
| | $-40x + 30x = 1620 - 1800$ | |
| | $-10x = -180$ | |
| | $x = 18$ | |

(23)

$$x \frac{1}{5}x = \frac{5x-x}{5} = \frac{4x}{5}$$

$$\frac{4x}{5} - \frac{1}{5}\left(\frac{4x}{5}\right) = \frac{16x}{25}$$

$$\frac{16x}{25} - \frac{1}{5}\left(\frac{16x}{25}\right) = \frac{64x}{125}$$

$$\frac{64x}{125} = 512$$

$$64x = 64000$$

$$x = 1000$$

(24)

$$\sqrt{\frac{2x}{3}} - 60 = 40$$

$$\sqrt{\left(\frac{2x}{3}\right)^2} = (100)^2$$

$$\frac{2x}{3} = 10000$$

$$2x = 30000$$

$$x = 15000$$

(25)

$$x-100 + \frac{1}{3}(x-100) = \frac{4x-400}{3}$$

$$\frac{4x-400}{3} + 100 = \frac{4x-700}{3} + \frac{1}{3}\left(\frac{4x-700}{3}\right) = \frac{16x-2800}{9}$$

$$\frac{16x-2800}{4} - 100 = \frac{16x-3700}{9} + \frac{1}{3}\left(\frac{16x-3700}{9}\right) = \frac{64x-14800}{27}$$

$$\frac{64x-14800}{27} = 2x$$

$$64x - 14800 = 54x$$

$$10x = 14800$$

$$x = 1480$$

(21)

$$\frac{x}{5} = \frac{x}{8} + 6$$

$$8x = 5x + 240$$

$$3x = 240$$

$$x = 80$$

(22)

$$\sqrt{\frac{4x}{6}} - 60 = 40$$

$$\sqrt{\frac{4x}{6}} = 40 + 60$$

$$\sqrt{\left(\frac{4x}{6}\right)^2} = (100)^2$$

$$\frac{4x}{6} = 10000$$

$$4x = 60000$$

$$x = 15000$$

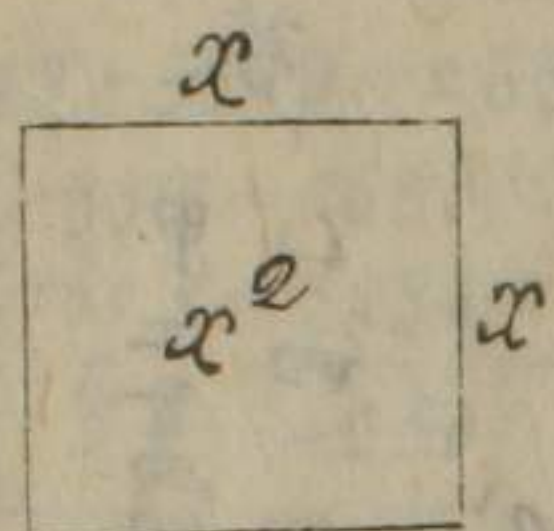
洋

答 八十元

答 一万五千元

答 千四百八十元

羊算卷



(35)

$$x^2 + 9 = (x+1)^2 - 10$$

$$x^2 + 9 = x^2 + 2x + 1 - 10$$

$$2x = 18$$

$$x = 9$$

答 九十圓

$$x^2 + 9 = 81 + 9 = 90$$

(36)

甲 = 4x

$$4x - (2x - 3) - \frac{2}{13}(4x - (2x - 3)) + \frac{23x - 11}{13} = 19$$

$$2x + 3 - \frac{4x + 6}{13} + \frac{23x - 11}{13} = 19$$

$$26x + 39 - 4x - 6 + 23x - 11 = 247$$

$$45x = 225 \quad x = 5$$

$$5 \times 4 = 20 \quad \frac{20}{2} - 3 = 7$$

答 甲最初損失七圓

乙 = 3x

$$\frac{7}{3}(3x + (2x - 3)) + \frac{2}{13}(4x - (2x - 3))$$

$$x + \frac{2x}{3} - 1 + \frac{8x}{39} - \frac{4x}{39} + \frac{6}{39} = 39$$

$$\frac{39x + 26x - 39 + 8x - 4x + 6}{39} = \frac{23x - 11}{13}$$

(32)

$$\frac{1}{3}x + 100 = \frac{1}{2}x - 450$$

$$2x + 600 = 3x - 2700$$

$$3x - 2x = 600 + 2700$$

$$x = 3300$$

答 三千三百圓

(31)

尾 = x 背 = 9 + x

$$x = 9 + \frac{9+x}{2}$$

$$2x = 18 + 9 + x$$

$$x = 27$$

$$9 + 9 + 27 + 27 = 72$$

答 七尺貳寸

(33)

$$x - (\frac{1}{2}x + 1) = x - \frac{1}{2}x - 1 = \frac{2x - x - 2}{2} = \frac{x - 2}{2}$$

$$\frac{x - 2}{2} - (\frac{1}{2}(\frac{x - 2}{2}) + 2) = \frac{x - 2}{2} - \frac{x - 2}{4} - 2 = \frac{x - 10}{4}$$

$$\frac{x - 10}{4} = 3$$

$$x - 10 = 12 \quad x = 22$$

答 二十二個

(34)

$$x(\frac{1}{3}x + 2) = x - \frac{1}{3}x - 2 = \frac{3x - x - 6}{3} = \frac{2x - 6}{3}$$

$$\frac{2x}{3} - (\frac{1}{2}(\frac{2x - 6}{3}) - 1) = \frac{2x - 6}{3} - \frac{x - 3}{3} + 1 = \frac{x}{3}$$

$$\frac{x}{3} = 54 \quad x = 162$$

答 百六十二圓

$$\begin{array}{r}
 40x + 35y = 2630 \\
 40x + 35y = 2630 \\
 40x + 40y = 2880 \\
 \hline
 -5y = -250 \\
 \hline
 y = 50 \\
 \hline
 x + y = 72 \\
 x + 50 = 72 \\
 x = 22
 \end{array}$$

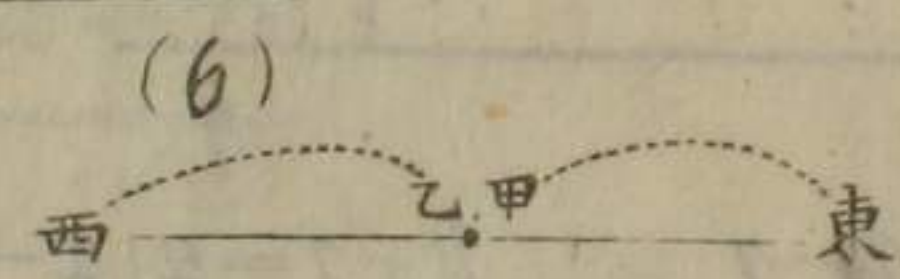
答
乙甲
五十二
十日日

$$\begin{array}{r}
 \text{甲泉} = x \quad \text{乙泉} = y \\
 5x + 4y = 330 \\
 15x + 12y = 990 \quad (3) \\
 8x + 12y = 780 \\
 \hline
 7x = 210 \\
 x = 30 \\
 \hline
 2x + 3y = 195 \\
 8x + 12y = 780 \quad (4) \\
 2 \times 30 + 3y = 195 \\
 3y = 135 \\
 y = 45
 \end{array}$$

答
乙甲
泉泉
一日一日
四十三
十五十
五桶桶

$$\begin{array}{r}
 \text{先時} = x \quad \text{距離} = y \\
 x = \frac{3 \times 6}{5} - 3 \\
 5x = 18 - 15 \\
 5x = 3 \\
 x = \frac{3 \times 60}{5} = \frac{180}{5} = 36 \\
 \frac{1}{2}y = 18 \\
 y = 36
 \end{array}$$

答
先達時間三十六分
距離三十六里



$$\begin{array}{r}
 \text{甲} = x \quad \text{乙} = y \quad (1) \\
 x - y = 20 \\
 x - 6y = 0 \\
 \hline
 5y = 20 \\
 y = 4 \\
 \hline
 x - 6 \times 4 = 0 \\
 x - 24 = 0 \\
 x = 24
 \end{array}$$

答
乙甲
四十二
個個

$$\begin{array}{r}
 x + y = 1000 \quad (2) \\
 2x + 2y = 2000 \\
 3x - 2y = 0 \\
 \hline
 5x = 2000 \\
 x = 400 \\
 \hline
 x - \frac{2}{3}y \\
 3x = 2y \\
 3x - 2y = 0 \\
 3 \times 400 - 2y = 0 \\
 2y = 1200 \\
 y = 600
 \end{array}$$

答
乙甲
六百元
四百元

$$\begin{array}{r}
 \text{治世} = x \quad \text{壽} = y \quad (3) \\
 x - 5 = \frac{y - 5}{2} \\
 2x - 10 = y - 5 \\
 4x = y + 15 \\
 \hline
 4x = 33 + 15 \\
 x = 12 \\
 \hline
 \frac{y + 9}{2} = x + 9 \\
 y + 9 = 2x + 18 \\
 2x = y - 9 \\
 4x = 2y - 18 \\
 4x = y + 15 \\
 \hline
 0 = y - 33 \quad y = 33
 \end{array}$$

答
即位壽治世
三十三
二十三年
十二年

$$\text{即位} = 33 - 12 = 21$$

二元一次方程式

(10)

$$\begin{array}{r} 3x+4y=5300 \\ \frac{1}{5}x+\frac{1}{10}y=220 \end{array}$$

$$\begin{array}{r} 2x+y=2200 \quad (10) \\ 8x+4y=8800 \quad (4) \\ 3x+4y=5300 \quad (1) \\ \hline 5x=3500 \quad (-) \\ x=700 \end{array}$$

答
乙甲
八百
百圓

(11)

$$\begin{array}{r} 2x+3y=100 \\ 3x+\frac{1}{2}y=50 \\ 6x+y=100 \end{array}$$

$$\begin{array}{r} 2 \times 12.5 + 3y = 100 \\ 25 + 3y = 100 \\ 3y = 75 \\ y = 25 \end{array}$$

$$\begin{array}{r} 18x + 3y = 300 \quad (3) \\ 2x + 3y = 100 \quad (1) \\ \hline 16x = 200 \quad (-) \\ x = 12.5 \end{array}$$

答
乙甲
二斗
五升

(12)

得魚 = x 不得魚 = y

$$\begin{array}{r} 5x-3y=28 \\ x+y=12 \end{array}$$

$$\begin{array}{r} 3x+3y=36 \quad (3) \\ 5x-3y=28 \quad (1) \\ \hline 8x=64 \quad (+) \\ x=8 \end{array}$$

答
魚ヲ得ル
八度

(17)

$$\begin{array}{r} 500x+125y=2125 \\ x+y=8 \end{array}$$

$$\begin{array}{r} 500x+500y=4000 \quad (500) \\ 500x+125y=2125 \quad (1) \\ \hline 375y=1875 \quad (-) \\ y=5 \end{array}$$

答
貳貳
未分
金五
牧

(8)

甲勝 = x 乙勝 = y

$$\begin{array}{r} x+y=20 \\ 2x+2y=40 \quad (2) \\ -3x+2y=5 \end{array}$$

$$\begin{array}{r} 5) 5x=35 \quad (1) \\ x=7 \end{array}$$

$$\begin{array}{r} 2x-3x=-5 \\ 2y-3x=5 \\ 2y-3 \times 7=5 \\ 2y-21=5 \\ 2y=26 \\ y=13 \end{array}$$

答
乙甲
勝七
十三度

(19)

$$\begin{array}{r} x+7=y-7 \\ x-y=-14 \end{array}$$

$$\begin{array}{r} y+7=2(x-7) \\ y+7=2x-14 \\ -2x+y=-21 \\ x-y=-14 \quad (+) \\ \hline -x=-35 \\ x=35 \end{array}$$

答
乙甲
四三
十九
個

$$x+y+z=236 \quad x+(x-\frac{1}{5}x)+(x-\frac{1}{5}x)-\frac{3}{10}(x-\frac{1}{5}x)=236$$

$$250x+(500x-100x)-(75x-15x)=59000$$

$$250x+400x-60x=59000$$

$$650x-60x=59000 \quad 590x=59000$$

$$x=100$$

(15)

男子 = x 中女 = y 少女 = z

$$x+y+z=236$$

$$x-\frac{2}{10}x=y \quad y-\frac{3}{10}y=z$$

$$10x-2x=10y \quad 10y-3y=10z$$

$$8x=10y \quad 7y=10z$$

$$x=\frac{10}{8}y \quad z=\frac{7}{10}y$$

$$236y=18880$$

$$y=80$$

$$x=\frac{10}{8} \times 80=100 \quad z=\frac{7}{10} \times 80=56$$

答

男子 一百
中女 八十
少女 五十六

(16)

$$x+\frac{1}{2}(y+z)=25$$

$$2x+y+z=50 \dots (A)$$

$$2x+18+16=50$$

$$x=0$$

$$y+\frac{1}{3}(x+z)=26$$

$$x+3y+z=78$$

$$x+y+2z=58 \dots (B)$$

$$2y-z=20 \dots (C)$$

$$2y-16=20 \quad y=18$$

$$z+\frac{1}{2}(x+y)=29$$

$$x+y+2z=58 \dots (B)$$

$$2x+2y+4z=116 \dots (2)$$

$$2x+y+z=50 \dots (A)$$

$$y+3z=66$$

$$2y+6z=132 \dots (2)$$

$$2y-z=20 \dots (C)$$

$$7z=112$$

$$z=16$$

答

第一 十八
第二 十八
第三 十六

(13)

上 = x 下 = y

$$39x+30y=34 \times 54$$

$$39x+30y=1836$$

$$30x+30y=1620$$

$$9x=216$$

$$x=24$$

$$x+y=54$$

$$24+y=54$$

$$y=30$$

答

上 二十四
下 三十

(14)

金 = x 銀 = y

$$x-\frac{2}{39}x+y-\frac{2}{21}y=39$$

$$x+y=42$$

$$x=42-y$$

$$(42-y)-\frac{2}{39}(42-y)+y-\frac{2}{21}y=39$$

$$42-y-\frac{82}{39}+\frac{2}{39}y+y-\frac{2}{21}y=39$$

$$\frac{2}{39}y-\frac{2}{21}y=\frac{82}{39}-3$$

$$x=42-19\frac{1}{4}$$

$$x=22\frac{3}{4}$$

$$14y-26y=588-819$$

$$-12y=-231$$

$$y=19\frac{1}{4}$$

答

金 二十二錢四分三
銀 十九錢四分一

$$\frac{84}{70} - \frac{1}{70} = \frac{73}{70}$$

$$\frac{84}{70} - \frac{70}{70} = \frac{14}{70} = \frac{1}{5}$$

$$\frac{14}{70} = \frac{1}{5}$$

(17)

甲 = x 乙 = y 丙 = z

$\frac{1}{x} + \frac{1}{y} = \frac{1}{70}$ (A)
 $\frac{1}{x} + \frac{1}{z} = \frac{1}{84}$ (A)
 $\frac{1}{y} - \frac{1}{z} = \frac{1}{420}$ (B)

$\frac{1}{x} + \frac{1}{z} = \frac{1}{84}$ (A)
 $\frac{1}{y} - \frac{1}{z} = \frac{1}{420}$ (B)

$\frac{1}{x} = \frac{1}{420} - \frac{1}{420} = 0$
 $\frac{1}{y} = \frac{1}{420} + \frac{1}{420} = \frac{2}{420} = \frac{1}{210}$
 $\frac{1}{z} = \frac{1}{84} - \frac{1}{420} = \frac{5}{420} - \frac{1}{420} = \frac{4}{420} = \frac{1}{105}$

$x = 420$ 時分
 $y = 210$ 時分
 $z = 105$ 時分

$\frac{1}{140} - \frac{1}{420} = \frac{200}{50400} = \frac{2}{420}$

甲 一時四十五分
 乙 三時三十分
 丙 七時

(18)

長子 = x 少子 = y 女子 = z

$y = 2z + 10000$
 $y - 2z = 10000$ (A)

$x = 3y + 15000$
 $x - 3y = 15000$ (A)

$4y - 8z = 40000$ (B)
 $4y - 8 \times 10000 = 40000$
 $4y - 80000 = 40000$
 $4y = 120000$
 $y = 30000$

$x + y + z = 955000$
 $x - 3y = 15000$ (A)

$4y + z = 940000$
 $4y - 8z = 40000$ (B)

$9z = 900000$
 $z = 100000$

長子 六十四萬五千元
 少子 二十一萬五千元
 女子 十萬元

(19)

$y + \frac{3}{7}x = 2190$
 $3x + 7y = 15330$ (A)

$z + \frac{5}{9}y = 2190$
 $5y + 9z = 19710$ (A)

$3x + 2z = 6570$ (A)
 $7y - 2z = 8760$ (B)

$35y - 10z = 43800$ (B)
 $35y - 10 \times 1290 = 43800$
 $35y - 12900 = 43800$
 $35y = 56700$
 $y = 1620$

$z + \frac{5}{9}y = 2190$
 $z + \frac{5}{9} \times 1620 = 2190$
 $z + 900 = 2190$
 $z = 1290$

$3x + 2z = 6570$ (A)
 $3x + 2 \times 1290 = 6570$
 $3x + 2580 = 6570$
 $3x = 3990$
 $x = 1330$

甲 一千三百三十元
 乙 一千六百九十元
 丙 二千二百九十元

(21)

大器 = x 中器 = y 小器 = z

$$\begin{array}{r}
 2z - 4y + 9x = 28 \\
 8z + 4y - 6x = 4 \dots (A) \\
 \hline
 10z + 3x = 32 \\
 20z + 6x = 64 \\
 12z - 6x = 0 \dots (C) \\
 \hline
 32z = 64 \\
 z = 2
 \end{array}
 \qquad
 \begin{array}{r}
 7z + 3y - 5x = 3 \\
 28z + 12y - 20x = 12 \\
 24z + 12y - 18x = 12 \dots (B) \\
 \hline
 4z - 2x = 0 \\
 2z - 6x = 0 \dots (C) \\
 12x - 6x = 0 \\
 6x = 24 \\
 x = 4
 \end{array}$$

大器 四元
中器 三元
小器 二元

$$\begin{array}{r}
 8z + 4y - 6x = 4 \dots (A) \\
 24z + 12y - 18x = 12 \dots (B) \\
 \hline
 24x + 12y - 18x = 12 \\
 12y = 12 + 72 - 48 \\
 12y = 36 \\
 y = 3
 \end{array}$$

$$\begin{array}{l}
 \frac{1}{x} + \frac{1}{y} = \frac{1}{a} \\
 x + y = a \dots (A) \\
 x + z = b \dots (B) \\
 y - z = a - b \dots (B) \\
 \frac{a-b+c}{2} - z = a - b \\
 z = \frac{b+c-a}{2} \\
 x = \frac{1}{a} + \frac{1}{b} - \frac{1}{c} \\
 \text{答} \quad \frac{2abc}{ac-ab+bc}
 \end{array}$$

$$\begin{array}{l}
 \frac{1}{x} + \frac{1}{z} = \frac{1}{b} \\
 x + z = b \dots (A) \\
 x + \frac{b+c-a}{2} = b \\
 x = \frac{2b-b-c+a}{2} \\
 x = \frac{a+b-c}{2} \\
 \text{答} \quad \frac{2abc}{ab+bc-ac}
 \end{array}$$

$$\begin{array}{l}
 \frac{1}{y} + \frac{1}{z} = \frac{1}{c} \\
 y + z = c \\
 y - z = a - b \dots (B) \\
 2y = a - b + c \\
 y = \frac{a-b+c}{2} \\
 \text{甲} = x \\
 \text{乙} = y \\
 \text{丙} = z \\
 \text{答} \quad \frac{2abc}{ac+ab+bc}
 \end{array}$$

$$x+y=10$$

$$\text{上式自乘}(x+y)=10$$

$$x^2+x^2+y^2+y^2=100$$

$$x^2+2xy+y^2=\frac{100}{x}$$

$$(12)$$

$$x^2+x+y^2=76$$

$$x^2+y+y^2=\frac{76}{x}$$

$$x^2+2xy+y^2=\frac{100}{x}$$

$$y=\frac{24}{x}$$

$$y=\frac{24}{x}$$

$$\frac{24}{x}=10-x$$

$$10x-x^2=24$$

$$x^2-10x=-24$$

$$(x-5)^2=-24+25$$

$$x=5\pm1=6$$

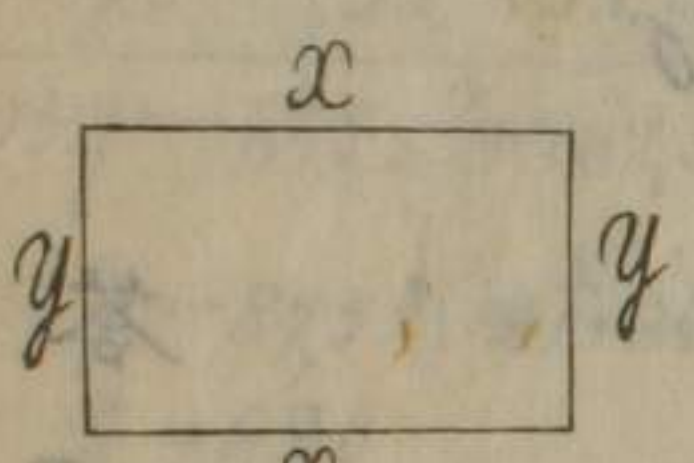
羊算發宗

馬價 = x

馬數 = y

$$x = \frac{1}{2}y$$

$$x = \frac{270}{2} = 135$$



$$xy = 16$$

$$y = \frac{16}{x}$$

$$y = \frac{16}{8} = 2$$

甲 = x

乙 = y

$$x+y=10$$

$$y=10-x$$

$$y=10-6=4$$

(10)

$$xy = 36450$$

$$\frac{1}{2}y \times y = 36450$$

$$y^2 = 72900$$

$$y = \sqrt{72900}$$

$$y = 270$$

(11)

$$2x+2y=20$$

$$x+y=10$$

$$x+\frac{16}{x}=10$$

$$x^2-10x=-16$$

$$\sqrt{(x-5)^2} = \sqrt{-16+(5)^2} = 9$$

$$x-5 = \pm 3 \quad x = 5+3 = 8$$

(12)

$$xy+x^2+y^2=76$$

$$x(10-x)+(10-x)^2+x^2=76$$

$$x^2-10x=-24$$

$$\sqrt{(x-5)^2} = \sqrt{-24+(5)^2} = 1$$

$$x-5 = \pm 1 \quad x = 5+1 = 6$$

答

馬馬
數價
二百
百三
七十五
元

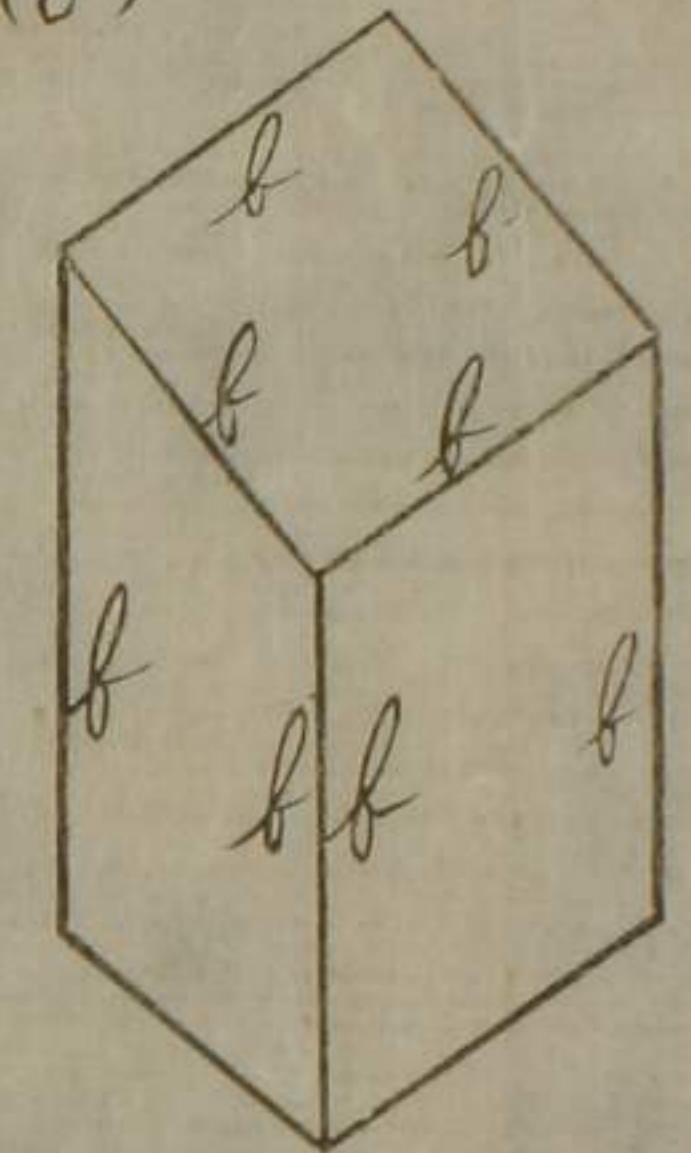
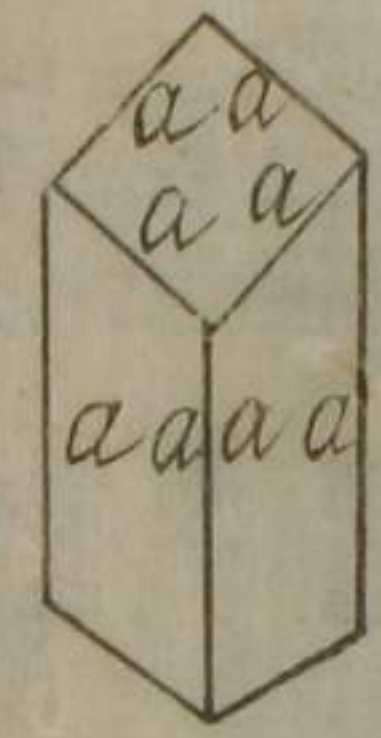
答

橫縱
二八
五五
元元

答

乙甲
四六
元元

(8)



$$\frac{100}{5} = 20 = a^2$$

$$\sqrt{20} = a$$

$$\frac{400}{5} = 80 = b^2$$

$$\sqrt{80} = b$$

$$a^3 : 200 = b^3 : x$$

$$20 \times \sqrt{20} : 200 = 80 \sqrt{80} : x$$

$$\sqrt{400 \times 20} : 200 = \sqrt{6400 \times 80} : x$$

$$x = \frac{200 \times \sqrt{512000}}{\sqrt{8000}} = \sqrt{\frac{20 \times 80000000}{8000}} = \sqrt{2560000} = 1600$$

(9)

$$700 : \frac{x}{4} = 140 : 2 + \frac{448}{x}$$

$$x^2 - 40x = 896$$

$$\sqrt{(x-20)^2} = \sqrt{896+(20)^2} = 1296$$

$$x-20 = \pm 36$$

$$x = 20+36 = 56$$

答 千六百錢

答 五十六分

洋算發宗

三
三
三

(16)

買相場 = x 想石數 = y

$$\frac{y}{x} = \frac{y}{x-3} - 17.5$$

$$\frac{y}{x} = \frac{y}{x-3-2} - 17.5 - 20$$

$$y(x-3) = xy - 17.5x(x-3)$$

$$-3y = -37.5x^2 + 187.5x$$

$$x^2 - 3y = xy - 17.5x^2 + 52.5x$$

$$-15y = -112.5x^2 + 562.5x$$

$$-3y = -17.5x^2 + 52.5x$$

$$-15y = -87.5x^2 + 262.5x$$

$$0 = -25x^2 + 300x$$

$$x^2 - 12x = 0$$

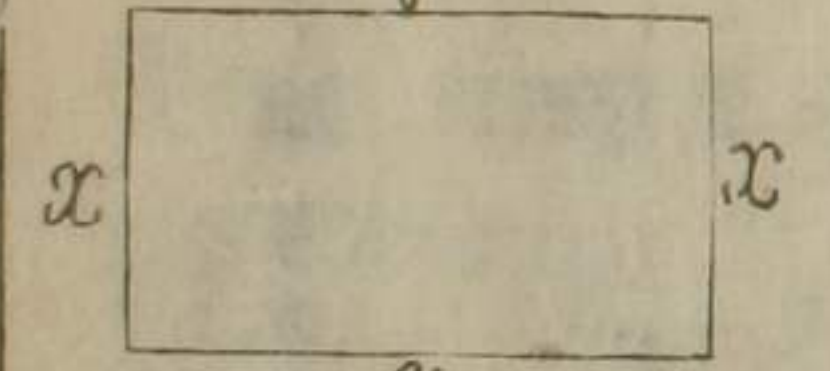
$$\sqrt{(x-6)^2} = \sqrt{36}$$

$$x = 6 + 6 = 12$$

$$y = 630$$

答
買置相場金壹圓一石二斗
想石數六十三石

平 = x 長 = y



$$2x + 2y = 200$$

$$x + y = 100$$

$$x = 100 - y$$

$$x = 100 - 80 = 20$$

(17)

$$xy = 7600$$

$$y(100-y) = 1600$$

$$100y - y^2 = 1600$$

$$y^2 - 100y = -1600$$

$$\sqrt{(y-50)^2} = \sqrt{-1600 + 2500}$$

$$y - 50 = \pm \sqrt{900}$$

$$y - 50 = \pm 30$$

$$y = 50 + 30 = 80$$

答
平長
二八十
十間

平圖

(13)

$$\frac{360}{x} = \frac{320}{x+10} + 4$$

$$360(x+10) = 320x + 4x(x+10)$$

$$4x^2 = 3600$$

$$\sqrt{x^2} = 900$$

$$x = 30$$

$$30 + 10 = 40$$

答
乙甲
四三十
五廿
以此

(14)

$$\frac{24}{x} = \frac{24}{20-x} - 1$$

$$x^2 + 28x = 480$$

$$\sqrt{(x+14)^2} = 480 + (14)^2 = 676$$

$$x + 14 = \pm 26$$

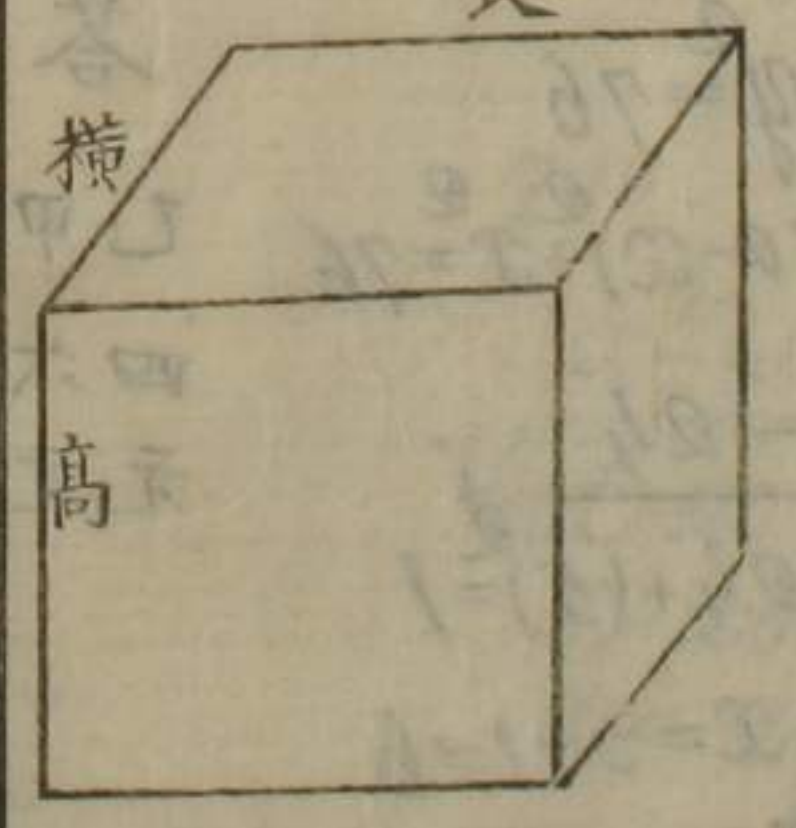
$$x = -14 + 26 = 12$$

$$20 - 12 = 8$$

答
女男
十八
二八

橫 = x 高 = y 長 = z

(15)

$$2x = y \quad 2y = z \quad 4x = z$$


$$xyz = 4096$$

$$x \times 2x \times 4x = 4096$$

$$8x^3 = 4096$$

$$\sqrt[3]{x^3} = 512$$

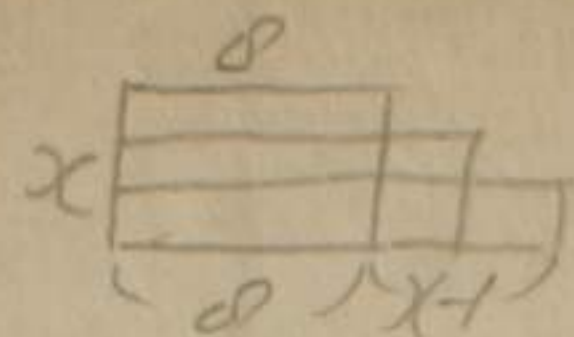
$$x = 8$$

$$y = 8 \times 2 = 16$$

$$z = 8 \times 4 = 32$$

答
橫高長
八壹三
寸尺二
寸寸

$$8x + \frac{2(x-1)x}{2}$$



(20)

日数 = x

西ヨ東ヘク
京リ京行人 = $8x + \frac{(x-1)2x}{2}$

東ヨ西ヘク
京リ京行人 = $7x + \frac{(x-1)x}{2}$

$$8x + \frac{(x-1)2x}{2} + 7x + \frac{(x-1)x}{2} = 105$$

$$16x + 2x^2 - 2x + 14x + x^2 - x = 210$$

$$3x^2 + 27x = 210 \quad x^2 + 9x = 70$$

$$\sqrt{\left(x + \frac{9}{2}\right)^2} = 70 + \left(\frac{9}{2}\right)^2$$

$$x + \frac{9}{2} = \pm \frac{19}{2}$$

$$x = -\frac{9}{2} + \frac{19}{2} = 5$$

答

日数五日

洋算發蒙

男 = x 價 = y

$$xy = 8 \times 20 + 15$$

$$xy = 175$$

$$x = \frac{175}{y}$$

$$x = \frac{175}{35} = 5$$

$$5 + 2 = 7$$

(21)

$$(x+2)(y-10) = 8 \times 20 + 15$$

$$\left(\frac{175}{y} + 2\right)(y-10) = 175$$

$$y^2 - 10y = 875$$

$$\sqrt{(y-5)^2} = 875 + (5)^2$$

$$y-5 = \pm 30$$

$$y = 5 + 30 = 35$$

答

價人數
三十五
五
ト
一
匹

(18)

$$\frac{280}{x} = \frac{280}{x+14} + 1$$

$$280x + 3920 = 280x + x^2 + 14x$$

$$x^2 + 14x = 3920$$

$$\sqrt{(x+7)^2} = 3920 + (7)^2$$

$$x+7 = \pm \sqrt{3969}$$

$$x = -7 \pm 63$$

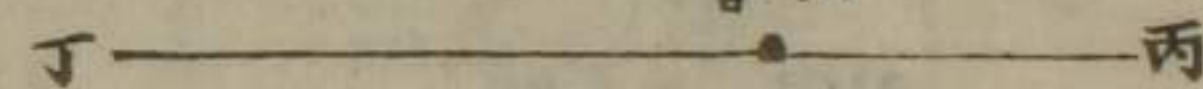
$$x = -7 + 63 = 56 \quad 56 + 14 = 70$$

答

推全
量尺
尺五
七十六
五
匹

(19)

會張



甲步 = x

乙步 = $y = x - 30$

$$x : \frac{y}{4} = y : \frac{x}{9} \quad 9y^2 = 4x^2$$

$$\sqrt{9y^2} = \sqrt{4x^2}$$

$$3y = 2x$$

$$3(x-30) = 2x$$

$$x = 90$$

$$y = 90 - 30 = 60 \quad 60 + 90 = 150$$

答

丙丁
距百五十里

洋算發蒙

洋算彙蒙

$\begin{matrix} \text{甲} = x & \text{乙} = y \\ y & x \\ \hline x-20 \end{matrix}$

$x + y = 100 + 80 = 180$
 $y = x - 20$
 $\frac{x}{25} = \frac{100}{25} = 4$
 $\frac{y}{16} = \frac{80}{16} = 5$

$x : \frac{y}{16} = y : \frac{x}{25}$
 $\frac{x^2}{25} = \frac{y^2}{16}$
 $16x^2 = 25y^2$
 $\sqrt{16x^2} = \sqrt{25y^2}$
 $4x = 5y$
 $4x = 5(x-20)$
 $x = 100 \quad y = 100 - 20 = 80$

答 甲 距 乙 甲 距
 使 使 離
 一 一 日
 日 日 五
 四 五 十
 里 里 里

$x + \frac{1}{4} : 1 = 15 : \frac{60}{4x+1}$
 $\frac{15}{x} = \frac{60}{4x+1} + 2$
 $8) 8x^2 + 2x = 15$
 $x^2 + \frac{1}{4}x = \frac{15}{8}$
 $\sqrt{(x + \frac{1}{8})^2} = \sqrt{\frac{15}{8} + (\frac{1}{8})^2}$
 $x + \frac{1}{8} = \pm \sqrt{\frac{121}{64}}$
 $x = -\frac{1}{8} \pm \frac{11}{8}$
 $x = -\frac{1}{8} + \frac{11}{8} = 1.9$
 $x = -\frac{1}{8} - \frac{11}{8} = 1.18$

答 甲 一 里 十 八 丁 乙 一 里 九 丁
 甲 = 里 丁 31 1/2
 乙 = 1 18

十五

$\frac{10y+30}{x} + \frac{21y+8}{a} = 15$
 $\frac{10y+30}{x} + \frac{21(y+15)+8}{x+30} = 15$
 $(x+30)(10y+30) + 21x(y+15) + 8x = 15x(x+30)$
 $31xy + 300y + 900 = 15x^2 + 450x$

$\frac{120y+36}{x} + \frac{19y+2}{x+30} = 15$
 $(x+30)(120y+36) + 19x(y+15) + 2x = 15x(x+30)$
 $312xy + 360y + 1080 = 15x^2 + 450x$

$x^2 - 80x = 0$
 $x(x-80) = 0$
 $x = 80$
 $x - 40 = 40$
 $x = 40 + 40 = 80$

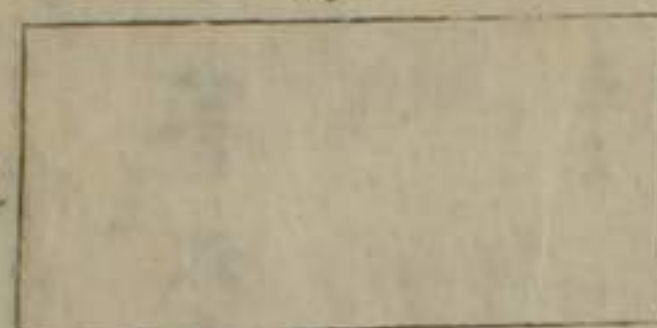
答 金一圓 豆一石 米八斗

答 如 此 之 類
 等 之 答 數
 得 之 十 二

洋算發宗

長=x 平=y

(27)



$$2x+2y=3602$$

$$x+y=1801$$

$$y=1801-x$$

$$xy+x^2+y^2=2543923$$

$$y(x(1801-x)+x^2+(1801-x)^2)=2543923$$

$$x^2-1801x=-699678$$

$$\sqrt{\left(x-\frac{1801}{2}\right)^2}=-699678+\left(\frac{1801}{2}\right)^2$$

$$x-\frac{1801}{2}=\pm\frac{667}{2}$$

$$x=\frac{1801}{2}+\frac{667}{2}$$

$$x=1234$$

$$y=1801-1234$$

$$y=567$$

答 長二千二百三十四間
平五百六十七間

第一=x 第二=y 第三=z

$$y=x+4$$

$$y=6+4=10$$

$$z=(x+4)+4$$

$$z=x+8$$

$$z=6+8=14$$

(28)

$$x^2+y^2+z^2=332$$

$$x^2+(x+4)^2+(x+8)^2=332$$

$$x^2+8x=84$$

$$\sqrt{(x+4)^2}=84+(4)^2$$

$$x+4=\pm 10$$

$$x=-4+10=6$$

答 第一
第二
第三
十六
圓圓圓

(25)

$$\frac{1140-x}{9x}=\frac{640-y}{6y}$$

$$x+y=1000$$

$$y=1000-x$$

$$6840y-60xy=5760x-9xy$$

$$6840y=5760x-3xy$$

$$y=1000-600=400$$

$$6840(1000-x)-5760x-3x(1000-x)$$

$$6840000-6840x=5760x-3000x+3x^2$$

$$x^2+3200x=2280000$$

$$\sqrt{(x+1600)^2}=2280000+(1600)^2=4840000$$

$$x+1600=\pm 2200$$

$$x=-1600+2200=600$$

(26)

$$\frac{175}{x}=\frac{175}{x+2}+10$$

$$175x+350=175x+10x^2+20x$$

$$10x^2+20x=350$$

$$x^2+2x=35$$

$$\sqrt{(x+1)^2}=35+1=36$$

$$x+1=\pm 6$$

$$x=-1+6=5$$

答

甲 六百圓
乙 四百圓

答 男子五人

(1)

$$7x+1=10y+6=3z$$

$$7x+1=10y+6 \quad 7x=10y+5 \quad x=\frac{10y+5}{7}=y+\frac{3y+5}{7}$$

$$\frac{3y+5}{7}=p \quad 3y+5=7p \quad y=\frac{7p-5}{3}=2p-1+\frac{p-2}{3}$$

$$\frac{p-2}{3}=q \quad p=3q+2 \quad y=2p-1+q$$

$$y=2(3q+2)-1+q=6q+4-1+q=7q+3$$

$$x=y+p=7q+3+3q+2=10q+5$$

$$7(10q+5)+1=70q+36=3z$$

$$70q+36=70q+36=3z \quad 3z=70q+36$$

$$z=\frac{70q+36}{3}=12+23q+\frac{q}{3} \quad \frac{q}{3}=r$$

$$q=3r=3 \times 1=3 \quad r=1 \text{ 定}$$

$$3z=70q+36$$

$$3z=70 \times 3+36=246$$

$$7x+1=10y+6=3z$$

$$246=246=246$$

不定題

答 二百四十六枚

又八十九枚 又六十六枚

(29)

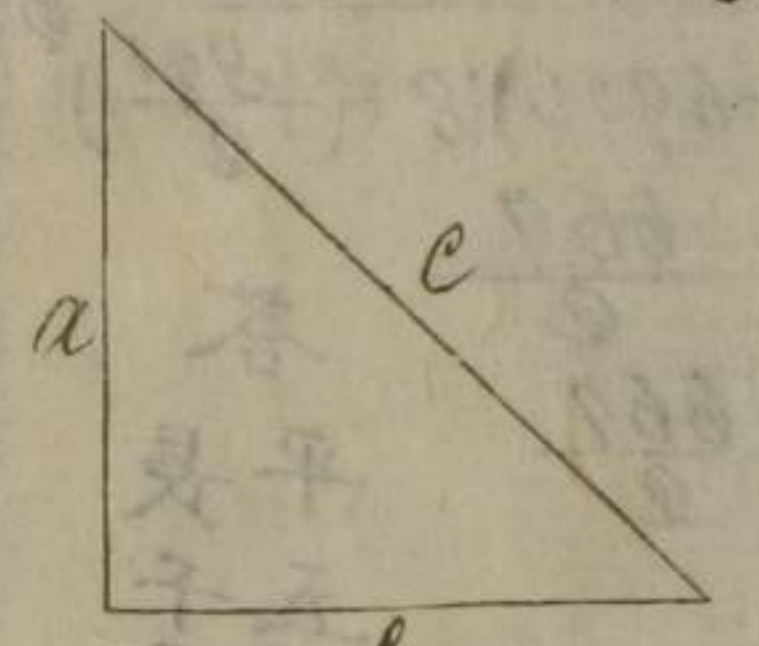
$$\frac{3840 \times 1250}{x} + 50x = 78200 \quad 70:5=100x$$

$$4800000 + 50x^2 = 78200x$$

$$x^2 - 1564x = -96000$$

$$\sqrt{(x-782)^2} = -96000 + (782)^2$$

$$x-782 = \pm 718 \quad x=782-718=64$$



(30)

$$a+b+c=48$$

$$a+a+4+c=48$$

$$2a+c=44$$

$$2a + \sqrt{a^2 + (a+4)^2} = 44$$

$$\sqrt{a^2 + (a+4)^2} = (44-2a)^2$$

$$a^2 + (a+4)^2 = (44-2a)^2$$

$$a^2 + a^2 + 8a + 16 = 1936 - 176a + 4a^2$$

$$a^2 - 92a = -960$$

$$\sqrt{(a-46)^2} = -960 + (46)^2$$

$$a-46 = \pm 34$$

$$a=46-34=12$$

$$b=a+4=12+4=16$$

$$c=48-a-b=48-12-16=20$$

答 六十四枚

答 c b a 二十十六寸寸

羊
算
發
家

(2)

鷄 = x 牝 = y 鳩 = z

$$\begin{array}{r} 8x + 10.5y + 3.5z = 309 \quad | \quad 10 \\ 80x + 105y + 35z = 3090 \\ 15x + 15y + 15z = 750 \end{array}$$

$$\begin{array}{r} x + y + z = 50 \quad | \quad 175 \\ 15x + 15y + 15z = 750 \end{array}$$

$$65x + 90y = 2340 \quad 13x + 18y = 468 \quad 18y = 468 - 13x$$

$$y = \frac{468 - 13x}{18} = 26 - \frac{13x}{18} \quad \frac{13x}{18} = p \quad 13x = 18p$$

$$x = \frac{18p}{13} = p + \frac{5p}{13} \quad \frac{5p}{13} = q \quad 5p = 13q \quad p = \frac{13q}{5}$$

$$p = 2q + \frac{3q}{5} \quad \frac{3q}{5} = r \quad 3q = 5r \quad q = \frac{5r}{3}$$

$$q = 7 + \frac{2r}{3} \quad \frac{2r}{3} = s \quad 2r = 3s \quad r = \frac{3s}{2}$$

$$r = 1 + \frac{s}{2} \quad \frac{s}{2} = t \quad s = 2t \quad t = 1$$

$$r = 1 + t = 2 \times 1 + 1 = 3$$

$$q = r + s = 3 + 2 \times 1 = 5$$

$$p = 2q + r = 2 \times 5 + 3 = 13$$

$$x = p + q = 13 + 5 = 18$$

$$y = 26 - p = 26 - 13 = 13$$

$$\begin{array}{r} x + y + z = 50 \\ 18 + 13 + z = 50 \\ z = 19 \end{array}$$

鷄
牝
鳩
十
十
十
九
三
八
羽
羽
羽

(2)

甲 = x 乙 = y 答

$$5x + 6y = 760 \quad 5x = 760 - 6y \quad x = \frac{760 - 6y}{5}$$

$$x = 32 - y - \frac{y}{5} \quad \frac{y}{5} = p \quad y = 5p$$

$$p = 1$$

$$x = 32 - y - p = 32 - 5 - 1 = 26$$

$$26 \times 5 = 130 \quad 760 - 130 = 630$$

(3)

$$6x + 5 = 8y + 5 = 10z + 5$$

$$6x + 5 = 8y + 5 \quad 6x = 8y \quad x = \frac{8y}{6} = y + \frac{2y}{6}$$

$$\frac{2y}{6} = p \quad 2y = 6p \quad y = \frac{6p}{2} = 3p$$

$$x = y + p = 3p + p = 4p$$

$$6(4p) + 5 = 8(3p) + 5 = 10z + 5$$

$$24p + 5 = 24p + 5 = 10z + 5$$

$$10z = 24p \quad z = \frac{24p}{10} = 2p + \frac{4p}{10} \quad \frac{4p}{10} = q$$

$$4p = 10q \quad p = \frac{10q}{4} = 2q + \frac{2q}{4} \quad \frac{2q}{4} = r \quad q = 2r$$

$$r = 1 \quad q = 2 \times 1 = 2 \quad p = 5$$

$$10z + 5 = 24p + 5 = 24 \times 5 + 5 = 125$$

$$\begin{array}{r} 6x + 5 = 8y + 5 = 10z + 5 \\ 125 = 125 = 125 \end{array}$$

答
百
二
十
五
個

羊算發宗

(6)

一圓扎 = x 一示扎 = y 一朱扎 = z

答

$$x + y + z = 9$$

$$3 + 3 + z = 9$$

$$z = 3$$

一 一 一
朱 示 圓
扎 扎 扎
三 三 三
枚 枚 枚

$$60x + 15y + 375z = 236,25,100$$

$$375 \overline{) 6000x + 1500y + 375z = 23625}$$

$$16x + 4y + z = 63$$

$$x + y + z = 9 \quad -$$

$$15x + 3y = 54$$

$$3y = 54 - 15x \quad y = \frac{54 - 15x}{3} = 18 - 5x$$

$$x = 3 \text{ 定}$$

$$y = 18 - 5x = 18 - 5 \times 3 = 3$$

(5)

甲日數 = x

乙日數 = y

$$25y = 36x - 5 \quad y = \frac{36x - 5}{25} = x + \frac{11x - 5}{25} = p$$

$$11x - 5 = 25p \quad 11x = 25p + 5 \quad x = \frac{25p + 5}{11} = 2p + \frac{3p + 5}{11}$$

$$\frac{3p + 5}{11} = q \quad 3p + 5 = 11q \quad 3p = 11q - 5 \quad p = \frac{11q - 5}{3}$$

$$p = 3q - 1 + \frac{2q - 2}{3} \quad \frac{2q - 2}{3} = r \quad 2q - 2 = 3r$$

$$2q = 3r + 2 \quad q = \frac{3r + 2}{2} = r + 1 + \frac{r}{2} \quad \frac{r}{2} = d$$

$$r = 2d \quad q = 1 \text{ 定}$$

答

$$r = 2d = 2 \times 1 = 2$$

$$q = r + 1 + d = 2 + 1 + 1 = 4$$

$$p = 3q - 1 + r = 3 \times 4 - 1 + 2 = 13$$

$$x = 2p + q = 2 \times 13 + 4 = 30$$

$$y = x + p = 30 + 13 = 43$$

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