

APPENDIX

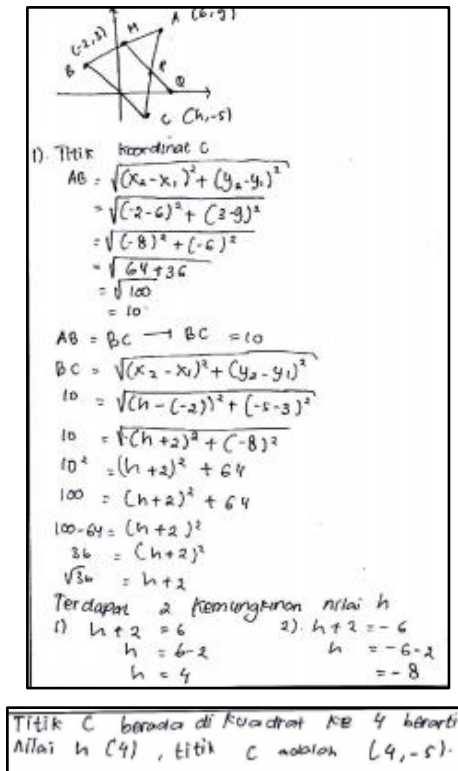


Figure 7. S-1 Sheet for Question 1 – First Round Test

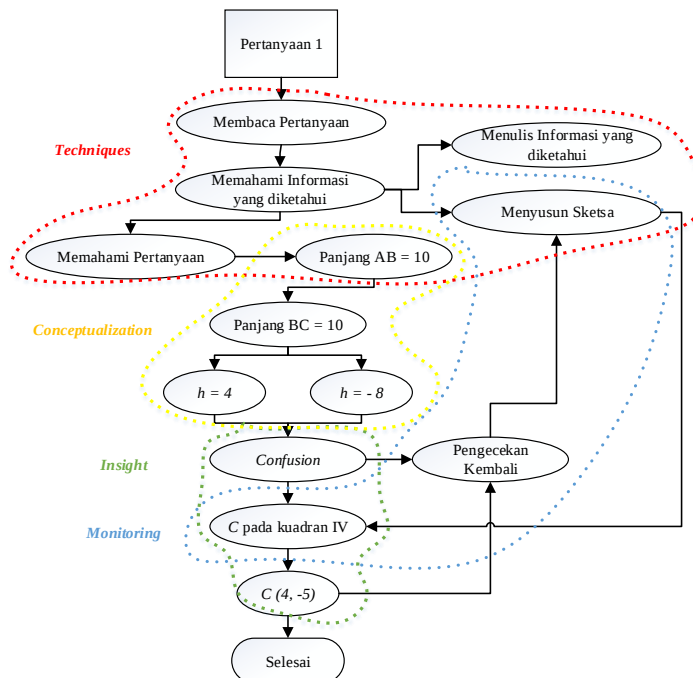


Figure 8. S-1 Reflective Thinking Structure for Question 1 – First Round Test

a). Cara 1.

$$g_{BS} = \frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$$

$$\frac{y - 3}{-9 - 3} = \frac{x - (-2)}{\frac{1}{2} - (-2)}$$

$$\frac{y - 3}{-10} = \frac{x + 2}{\frac{5}{2}}$$

$$\frac{15}{2}y - \frac{45}{2} = -10x - 20 \quad \times 2$$

$$15y - 45 = -20x - 40$$

$$20x + 15y - 5 = 0 \quad : 5$$

$$4x + 3y - 1 = 0$$

Substitusi c ke g_{BS}

$$4x + 3y - 1 = 4(4) + 3(-5) - 1 = 0$$

Terbukti BS melalui titik c .

Cara 2

$$g_{BS} = \frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$$

$$\frac{y - (-2)}{-5 - (-2)} = \frac{x - (-2)}{4 - (-2)}$$

$$\frac{y + 2}{-3} = \frac{x + 2}{6}$$

$$6y + 12 = -3x - 6$$

$$3x + 6y + 18 = 0 \quad : 3$$

$$x + 2y + 6 = 0$$

Persamaan garis $BS = g_{BC}$ berhimpit
Maka g_{BS} akan melalui titik c .

$$g_{BC} = \frac{y - 3}{-8} = \frac{x + 2}{6}$$

$$6y - 18 = -8x - 16$$

$$8x + 6y - 2 = 0 \quad : 2$$

$$4x + 3y - 1 = 0$$

Figure 9. S-1 Sheet for Question 2 – First Round Test

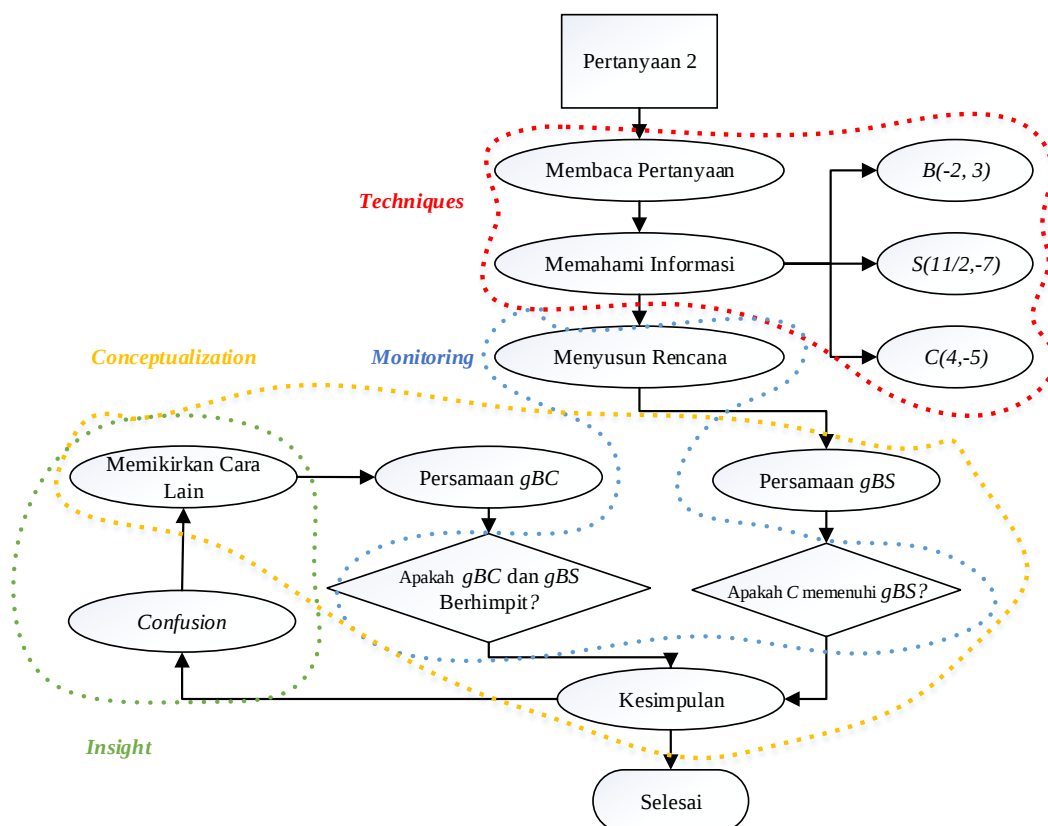


Figure 10. S-1 Reflective Thinking Structure for Question 2 – First Round Test

3). Titik koordinat Q.
Titik M berada ditengah-tengah A dan B.
 $(\frac{-2+6}{2}, \frac{3+9}{2}) = (2, 6)$
garis MQ // garis BC
 $g_{BC} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5-3}{4-(-2)} = \frac{-8}{6} = -\frac{4}{3}$
karena garis BC = MQ maka gradien garis MQ adalah $-\frac{4}{3}$
 $g_{MQ} = \frac{y - y_1}{x - x_1} = m(x - x_1)$
 $y - 6 = -\frac{4}{3}(x - 2)$
 $3y - 18 = -4x + 8$
 $4x + 3y - 18 = 0$
 $4x + 3y - 26 = 0$

Titik Q berada pada sumbu x, dapat dimisalkan $Q(x_0, 0)$
 $4x + 3y - 26 = 4(x_0 + 0) - 26 = 0$
 $4x_0 = 26$
 $x_0 = \frac{26}{4} = \frac{13}{2}$
didapat titik Q $(\frac{13}{2}, 0)$

Titik P
Titik P perpotongan antara garis AC dan MQ
 $g_{AC} = \frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$
 $\frac{y - 9}{-5 - 9} = \frac{x - 6}{4 - 6}$
 $\frac{y - 9}{-14} = \frac{x - 6}{-2}$
 $-2y + 18 = -14x + 84$
 $14x - 2y + 18 - 84 = 0$
 $7x - y - 33 = 0$
 $7x - 33 = y$
 $4x + 3y - 26 = 0$
 $4x + 3(7x - 33) - 26 = 0$
 $4x + 21x - 99 - 26 = 0$
 $25x - 125 = 0$
 $25x = 125$
 $x = \frac{125}{25} = 5$

$7x - 33 = y$
 $35 - 33 = y$
 $y = 2$
didapat titik P $(5, 2)$

Figure 11. S-1 Sheet for Question 3 – First Round Test

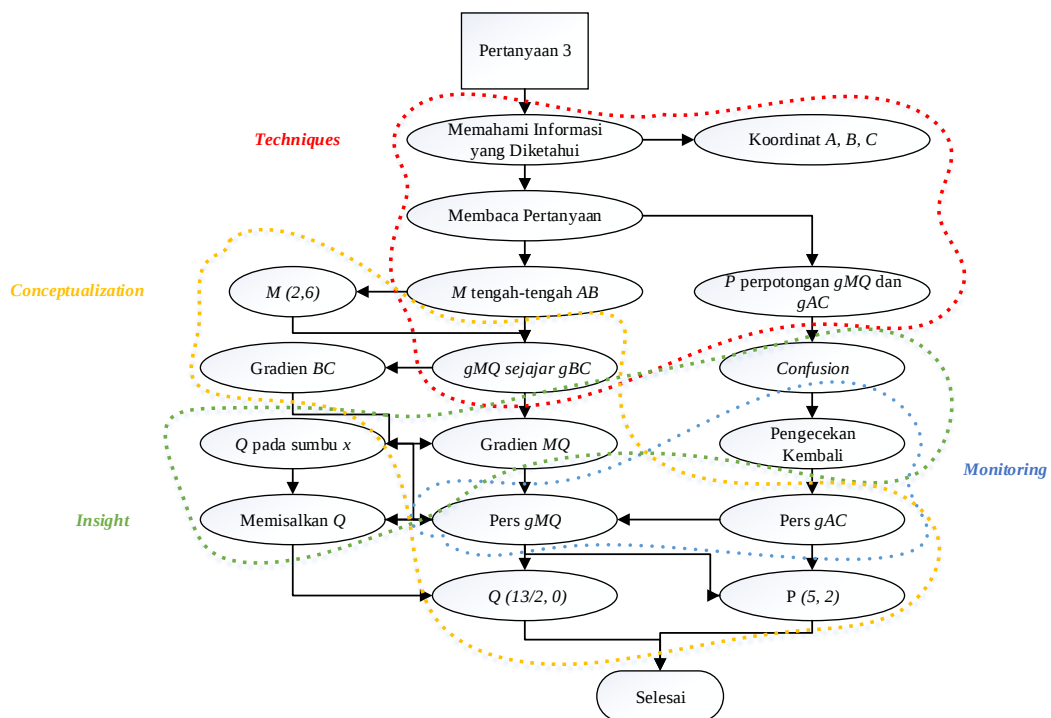


Figure 12. S-1 Reflective Thinking Structure for Question 3 – First Round Test

4). $M_P : P_Q$

$$M_P = \sqrt{(2-5)^2 + (6-2)^2}$$

$$= \sqrt{(-3)^2 + (4)^2}$$

$$= \sqrt{9+16}$$

$$= \sqrt{25}$$

$$= 5$$

$$P_Q = \sqrt{\left(5-\frac{13}{2}\right)^2 + (2-0)^2}$$

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

$$= \sqrt{\frac{9}{4} + 4}$$

$$= \sqrt{\frac{9}{4} + \frac{16}{4}}$$

$$= \sqrt{\frac{25}{4}}$$

$$= \frac{5}{2}$$

Perbandingan $M_P : P_Q = 2:1$

Cara 2

$$X_P = \frac{M \cdot x_Q + n \cdot x_m}{m+n}$$

$$5 = \frac{\frac{13}{2}m + 2n}{m+n}$$

$$5m + 5n = \frac{13}{2}m + 2n$$

$$5m - \frac{13}{2}m = 2n - 5n$$

$$-\frac{3}{2}m = -3n$$

$$\frac{3}{2}m = 3n$$

Sehingga Perbandingan $m:n = 2:1$.

Figure 13. S-1 Sheet for Question 4 – First Round Test

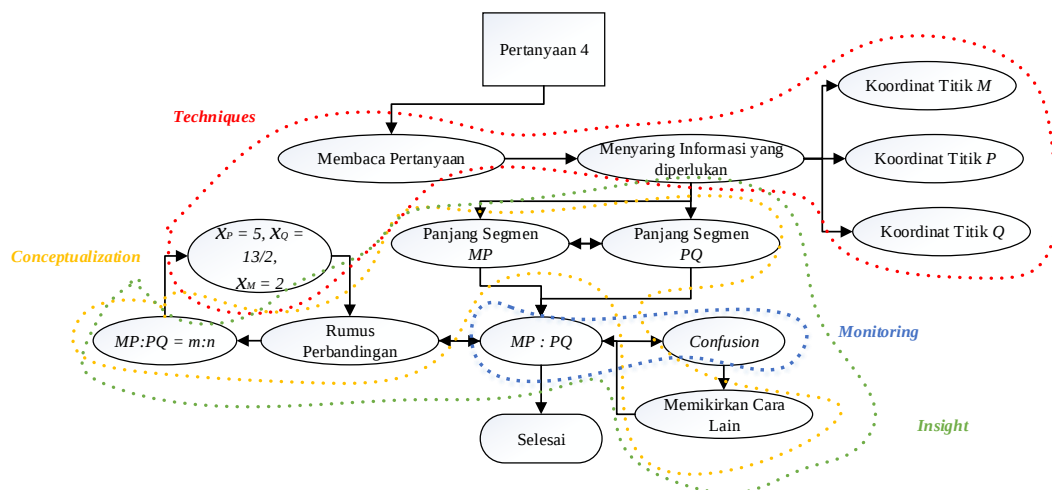


Figure 14. S-1 Reflective Thinking Structure for Question 4 – First Round Test

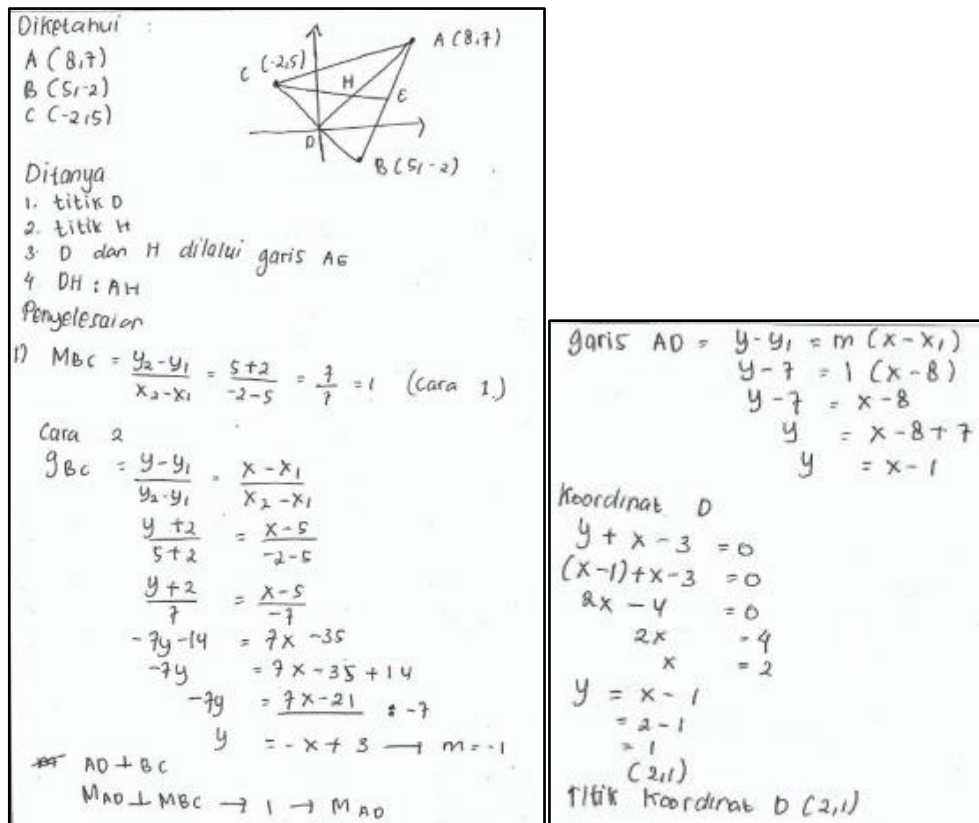


Figure 15. S-1 Sheet for Question 1 – Second Round Test

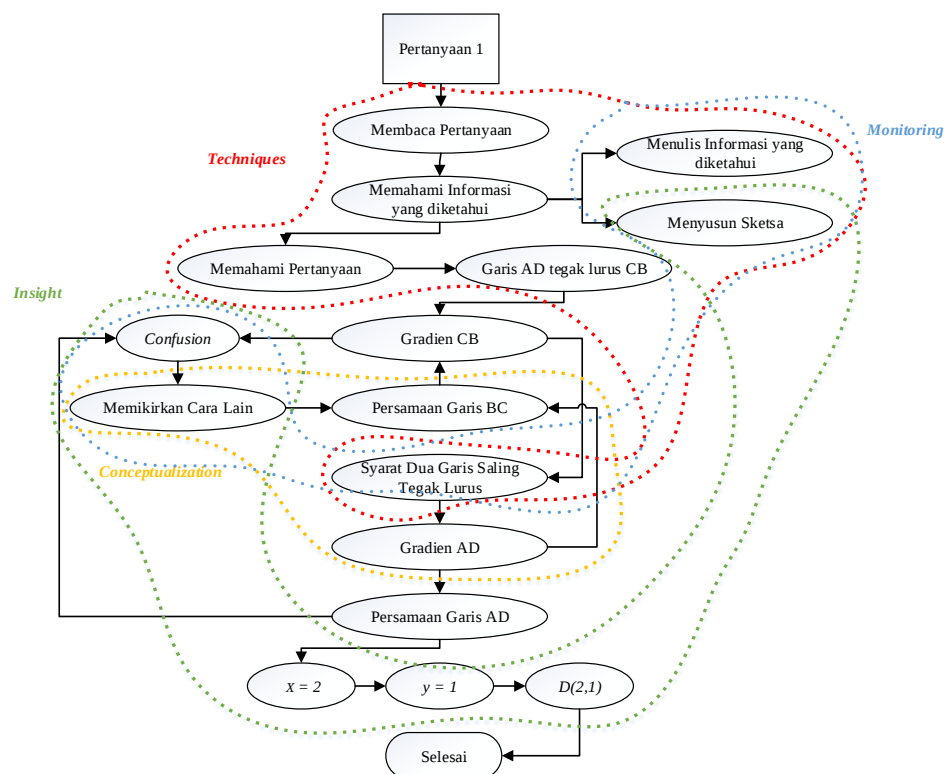


Figure 16. S-1 Reflective Thinking Structure for Question 1 – Second Round Test

2). $M_{AB} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 7}{5 - 8} = \frac{-9}{-3} = 3$

Persamaan garis

$$AB = \frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$$

$$\frac{y - 7}{-2 - 7} = \frac{x - 8}{5 - 8}$$

$$\frac{y - 7}{-9} = \frac{x - 8}{-3}$$

$$3y + 21 = -9x + 72$$

$$-9x = -3y + 51$$

$$= 3x + \frac{51}{3} \rightarrow M = 3$$

Garis $AB = y = 3x + \frac{51}{3}$
 Garis $CE \perp AB \rightarrow M_{AB \cdot CE} = 3$
 $M_{CE} = -\frac{1}{3}$
 Garis $CE = y - y_1 = m(x - x_1)$
 $y - 5 = -\frac{1}{3}(x + 2)$
 $3y - 15 = -x - 2$
 $3y = -x - 2 + 15$
 $3y = -x + 13$
 $y = -\frac{1}{3}x + \frac{13}{3}$
 $3y = -x + 13$
 $x + 3y - 13 = 0$

Substitusi AD ke CE

$$3x - y + \frac{51}{3} = 0$$

$$3x - (-\frac{1}{3}x + \frac{13}{3}) + \frac{51}{3} = 0$$

$$3x + \frac{1}{3}x - \frac{13}{3} + \frac{51}{3} = 0$$

$$\frac{10x}{3} + \frac{38}{3} = 0$$

$$10x + 38 = 0$$

$$10x = -38$$

$$x = -\frac{38}{10} = -\frac{19}{5}$$

$$y = x - 1$$

$$y - x + 1 = 0$$

$$(-\frac{19}{5}) - x + 1 = 0$$

$$-\frac{19}{5} - x + \frac{5}{5} = 0$$

$$-\frac{14}{5} - x = 0$$

$$x = -\frac{14}{5}$$

$$y = x - 1$$

$$y - x + 1 = 0$$

$$-\frac{14}{5} - x + 1 = 0$$

$$-\frac{14}{5} - x + \frac{5}{5} = 0$$

$$-\frac{9}{5} - x = 0$$

$$-\frac{9}{5} - x + \frac{10}{5} = 0$$

$$\frac{1}{5} - x = 0$$

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

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

$$y = x - 1$$

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

Koordinat H = $(\frac{1}{5}, -\frac{4}{5})$

Figure 17. S-1 Sheet for Question 2 – Second Round Test

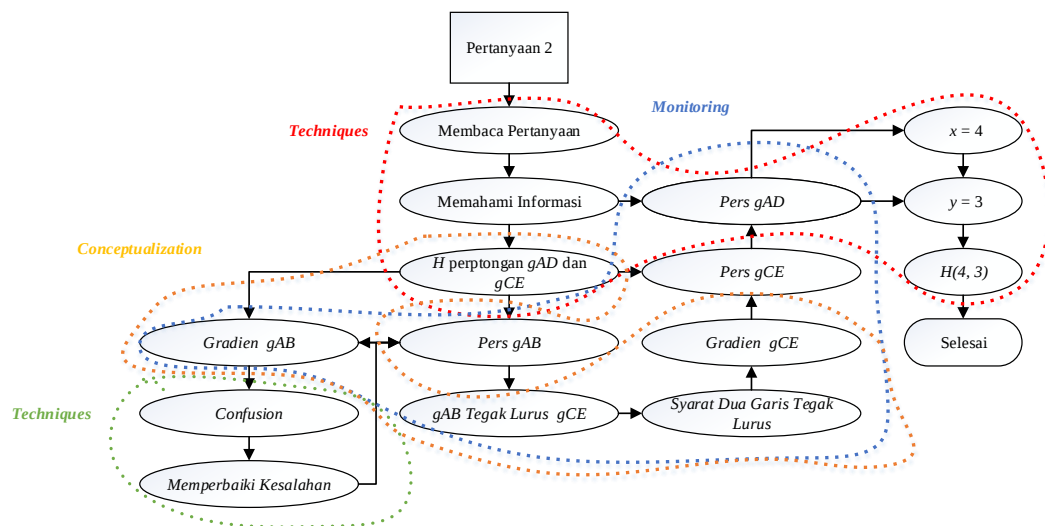


Figure 18. S-1 Reflective Thinking Structure for Question 2 – Second Round Test

3). Persamaan garis AG

$$\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1} \quad \text{Cara 1}$$

$$\frac{y - 3}{-3 - 1} = \frac{x - 8}{-2 - 8}$$

$$\frac{y - 3}{-4} = \frac{x - 8}{-10}$$

$$-10y + 30 = -10x + 80$$

$$-10y + 10x = 50 : 10$$

$$x - y - 1 = 0$$

titik D = (2,1) $\rightarrow 2 - 1 - 1 = 0$
titik H = (4,3) $\rightarrow 4 - 3 - 1 = 0$

Cara 2

garis DH: $\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$

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

$$\frac{y - 1}{2} = \frac{x - 2}{2} \quad \times 2$$

$$y - 1 = x - 2$$

$$-x + y - 1 + 2 = 0$$

$$-x + y + 1 = 0 \quad \times -1$$

$$x - y - 1 = 0$$

garis AG melalui titik D dan H

Figure 19. S-1 Sheet for Question 3 – Second Round Test

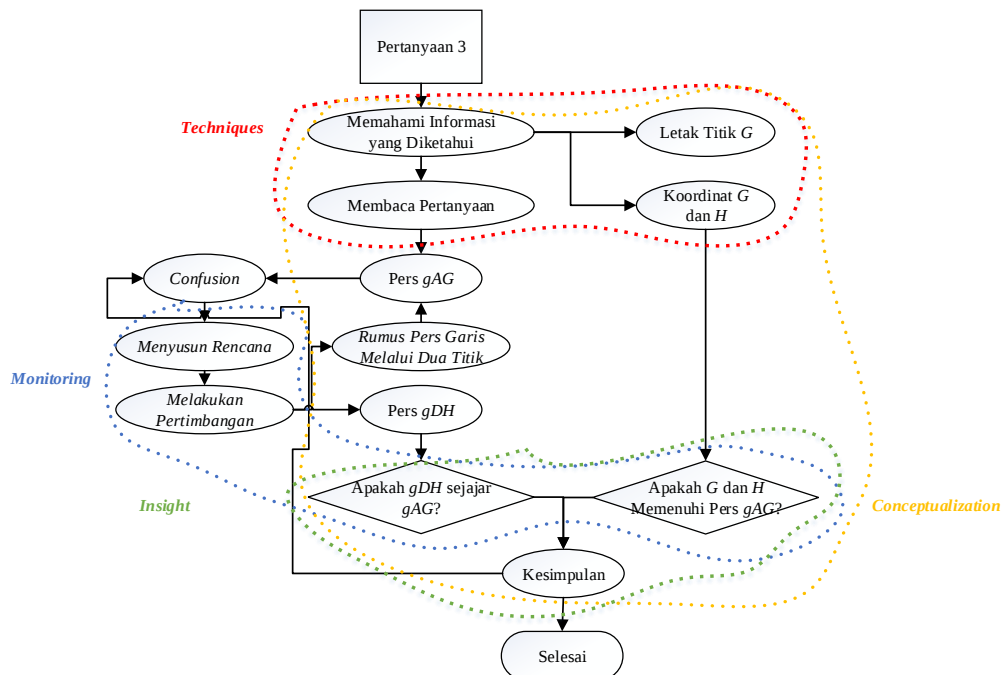


Figure 20. S-1 Reflective Thinking Structure for Question 3 – Second Round Test

4) Cara 1.

$$DH = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{(4-2)^2 + (3-1)^2} = \sqrt{2^2 + 2^2}$$

$$= \sqrt{4+4}$$

$$= \sqrt{8}$$

$$= 2\sqrt{2}$$

$$AH = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(4-8)^2 + (3-7)^2}$$

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

$$= \sqrt{16+16}$$

$$= \sqrt{32}$$

$$= 4\sqrt{2}$$

$$DH : AH = 2\sqrt{2} : 4\sqrt{2}$$

$$= 1 : 2$$

Cara 2

$$x_H = \frac{m x_A + n x_D}{m+n}$$

$$y = \frac{m y_A + n y_D}{m+n}$$

$$4m+4n = 8m+2n$$

$$4m = 2n$$

$$m : n = 1 : 2$$

Perbandingan $DH : AH = 1 : 2$

Figure 21. S-1 Sheet for Question 4 – Second Round Test

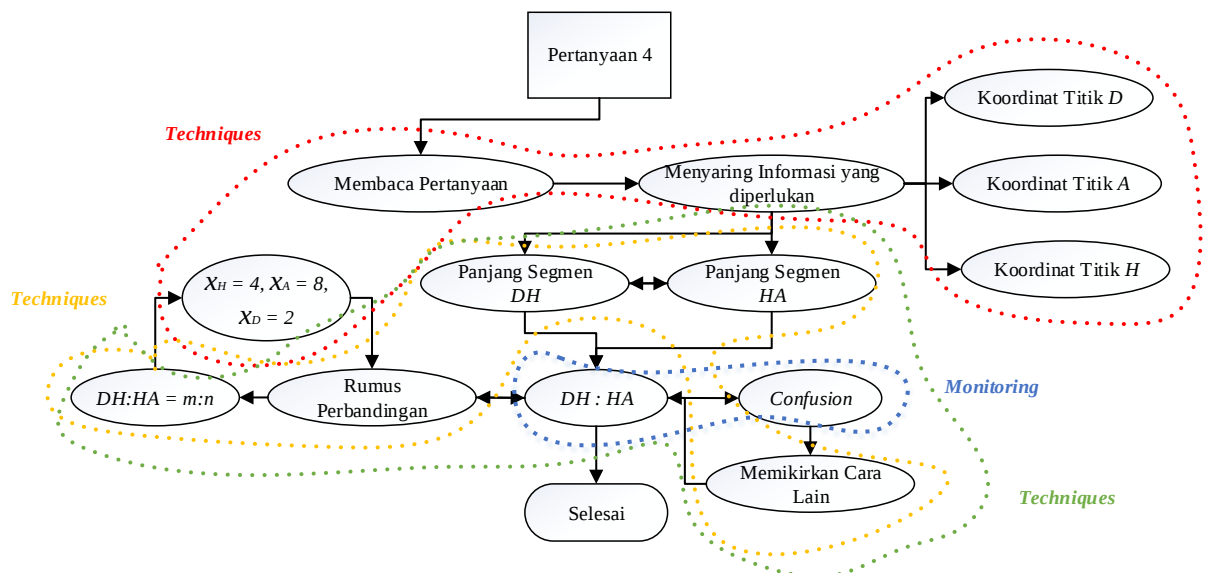


Figure 22. S-1 Reflective Thinking Structure for Question 4 – Second Round Test

Diketahui :

$\triangle ABC$ sama kaki, $AB = BC$

$A(6,9)$ $B(-2,3)$ $C(h,-5)$

Ditanya :

1. Koordinat titik C

$$AB = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$= \sqrt{(6 - (-2))^2 + (9 - 3)^2}$$

$$= \sqrt{8^2 + 6^2}$$

$$= \sqrt{64 + 36}$$

$$= \sqrt{100}$$

$$= 10$$

$AB = BC$

$10 = BC$

$10 = 10$

$$BC = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$= \sqrt{(h - (-2))^2 + (-5 - 3)^2}$$

$$10 = \sqrt{(h + 2)^2 + (-8)^2}$$

$$100 = (h + 2)^2 + 64$$

$$36 = (h + 2)^2$$

$$\sqrt{36} = h + 2$$

$$+ = h + 2$$

$$\frac{+}{6} = h + 2$$

$$4 = h$$

$$-6 = h + 2$$

$$-6 - 2 = h$$

$$-8 = h$$

$C(h, -5)$

$C = (4, -5)$

Figure 23. S-2 Sheet for Question 1 – First Round Test

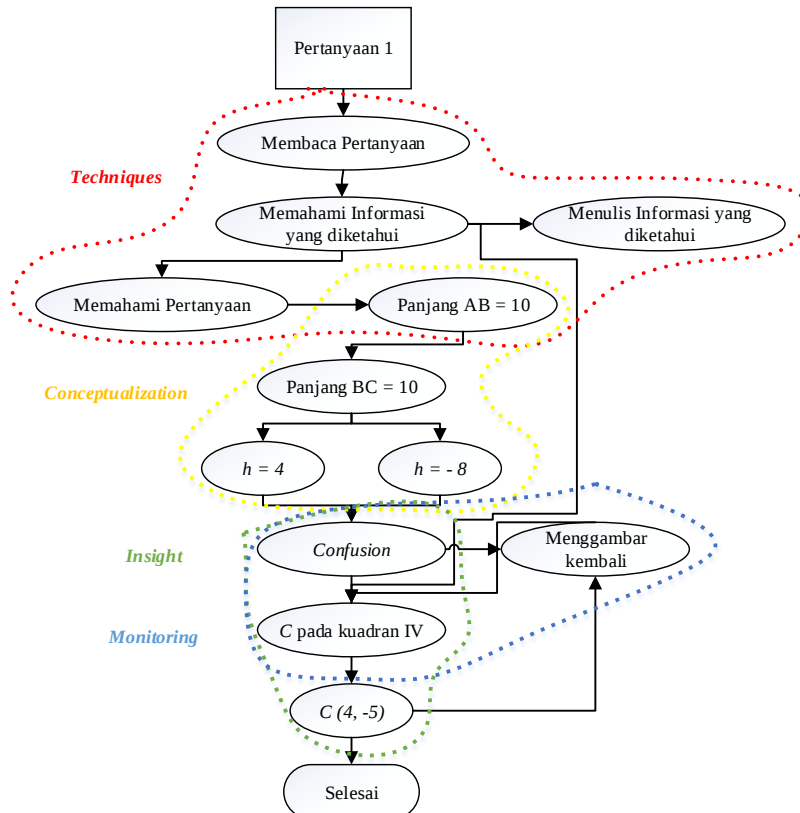


Figure 24. S-2 Reflective Thinking Structure for Question 1 – First Round Test

2) $S(\frac{1}{2}, -7)$

Apakah C dilalui garis BS

⇒ Mensubstitusikan C ke BS

I. gBS = $\frac{x-x_1}{x_2-x_1} = \frac{y-y_1}{y_2-y_1}$

$$\frac{x-(-2)}{\frac{1}{2}-(-2)} = \frac{y-3}{-7-3}$$

$$\frac{x+2}{\frac{1}{2}} = \frac{y-3}{-10}$$

$$-10(x+2) = \frac{1}{2}(y-3)$$

$$-10x - 20 = \frac{1}{2}y - \frac{3}{2}$$

$$-20x - 16 = \frac{1}{2}y - \frac{3}{2}$$

$$-20x - 40 + 15y - \frac{3}{2} = 0$$

$$-4x - 10 = 3y - 1$$

$$0 = 4x + 3y - 1$$

substitusi C(4, -5) ke gBS

$$= 4(4) + 3(-5) - 1$$

$$= 16 - 15 - 1$$

$$= 0$$

gBC itu pasti berimpit dengan gBS
BC(-2, 3)
C(4, -5)

gBC = $\frac{x-x_1}{x_2-x_1} = \frac{y-y_1}{y_2-y_1}$

$$\frac{x-(-2)}{4-(-2)} = \frac{y-3}{-5-3}$$

$$\frac{x+2}{6} = \frac{y-3}{-8}$$

$$-8(x+2) = 6(y-3)$$

$$-8x - 16 = 6y - 18$$

$$-8x - 2y + 6 + 18 = 0$$

$$-8x - 2y + 24 = 0$$

gBC : gBS ⇒ maka BC dan BS berimpit terbukti C dilalui garis BS

Figure 25. S-2 Sheet for Question 2 – First Round Test

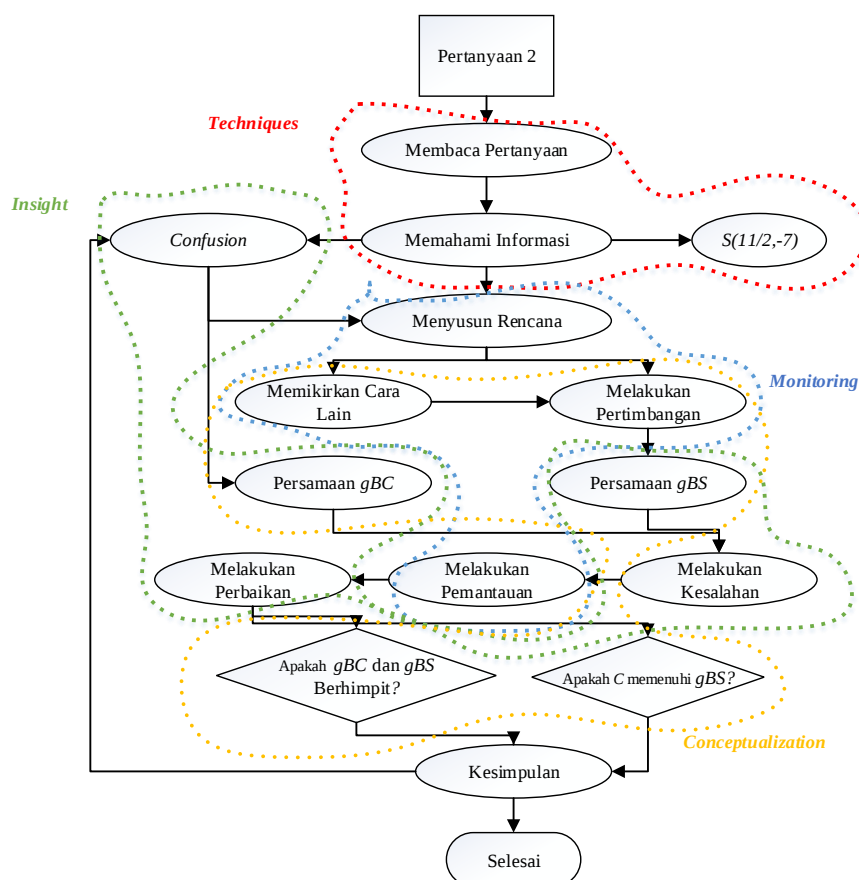


Figure 26. S-2 Reflective Thinking Structure for Question 2 – First Round Test

3. Titik koordinat Q dari P
M // gBC
I . gBC = 4x + 3y - 1 = 0
m . gBC = $-\frac{a}{b}$
= $-\frac{4}{3}$

U . m gBC = $\frac{y_c - y_b}{x_c - x_b}$
= $\frac{-5 - 3}{4 - (-2)}$
= $-\frac{8}{6}$
= $-\frac{4}{3}$
M tengah-tengah AB
M $(\frac{6+2}{2}, \frac{9-3}{2})$
M (4, 3)
Q berada tepat di sumbu x
Q (Xq, 0)
g . MQ = y - y1 = m (x - x1)
y - 3 = $-\frac{4}{3}(x - 4)$
y - 3 = $-\frac{4}{3}x + \frac{16}{3}$
 $\frac{4}{3}x - 9 = -4x - 16$
4x + 3y - 26 = 0
Q $(\frac{13}{2}, 0)$
koordinat titik P
P → gAC
C(4, -5) A(6, 9)

gAC = $\frac{x - x_1}{x_2 - x_1} = \frac{y - y_1}{y_2 - y_1}$
 $\frac{x - 4}{6 - 4} = \frac{y - (-5)}{9 - (-5)}$
 $\frac{x - 4}{2} = \frac{y + 5}{14}$
14(x - 4) = 2(y + 5)
7x - y - 33 = 0
P merupakan titik potong gAC dan gMQ
gAC = 7x - y - 33 = 0
7x - 33 = y
gMQ : 4x + 3y - 26 = 0
4x + 3(7x - 33) - 26 = 0
4x + 21x - 99 - 26 = 0
25x - 125 = 0
25x = 125
x = 5
y = 7 · 5 - 33
= 35 - 33
= 2
P(5, 2)

Figure 27. S-2 Sheet for Question 3 – First Round Test

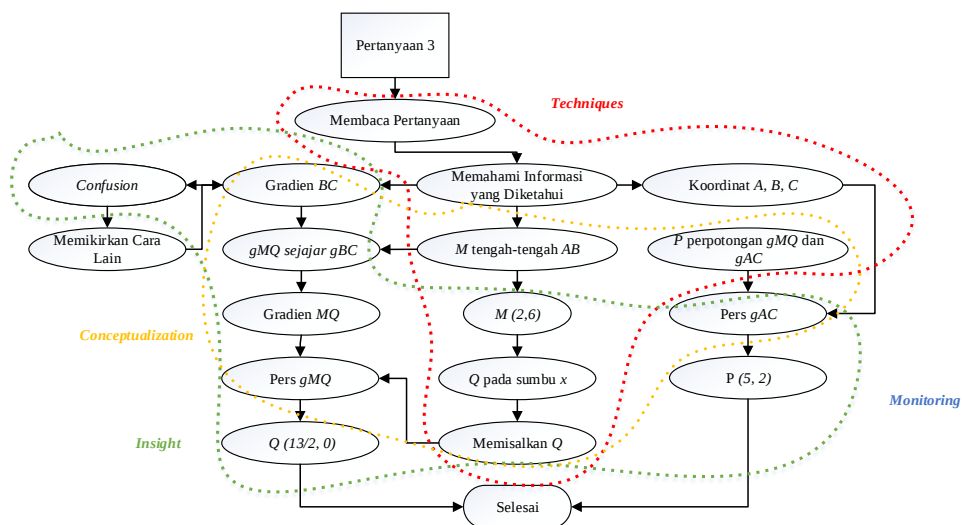


Figure 28. S-2 Reflective Thinking Structure for Question 3 – First Round Test

4.) MP : PQ
Menggunakan rumus perbandingan
 $MP : PQ = m : n$

$$\begin{aligned} x_p &= \frac{m \times m + n \times a}{m+n} \\ s &= \frac{m \cdot 4 + n \cdot \frac{13}{2}}{m+n} \\ s &= \frac{4m + \frac{13}{2}n}{m+n} \\ s(m+n) &= 4m + \frac{13}{2}n \\ sm + sn &= 4m + \frac{13}{2}n \quad \times 2 \\ 10m + 10n &= 8m + 13n \\ 2m &= 3n \\ m:n &= 3:2 \end{aligned}$$

Figure 29. S-2 Sheet for Question 4 – First Round Test

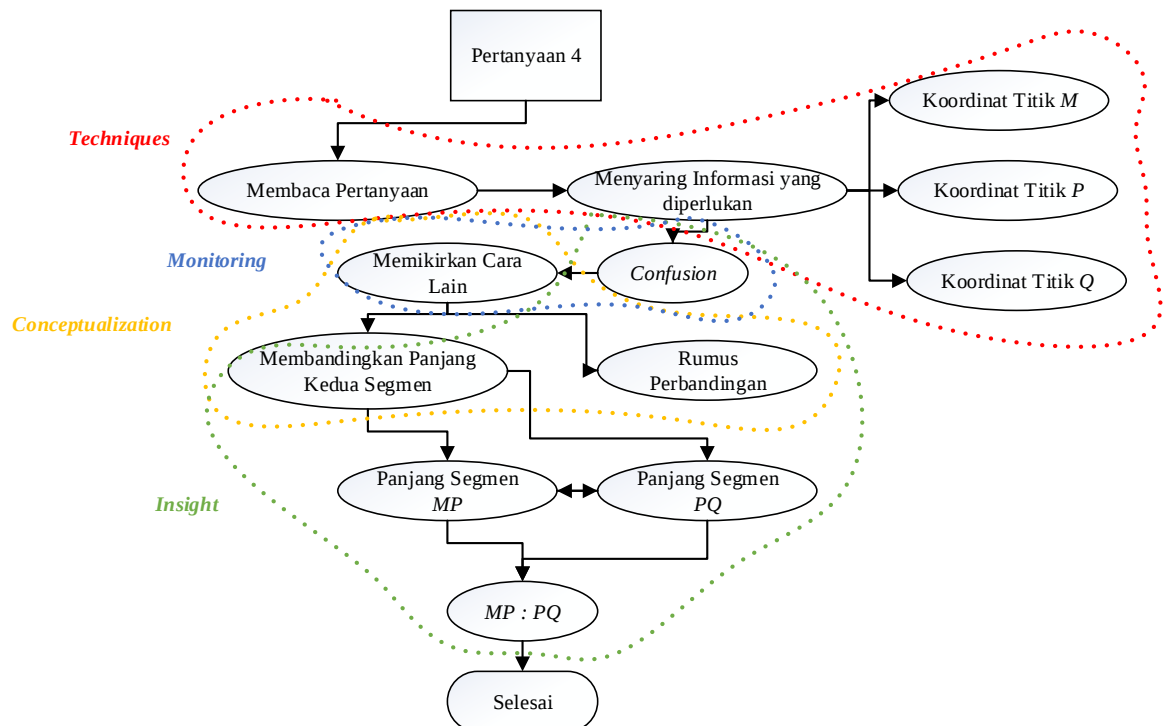


Figure 30. S-2 Reflective Thinking Structure for Question 4 – First Round Test

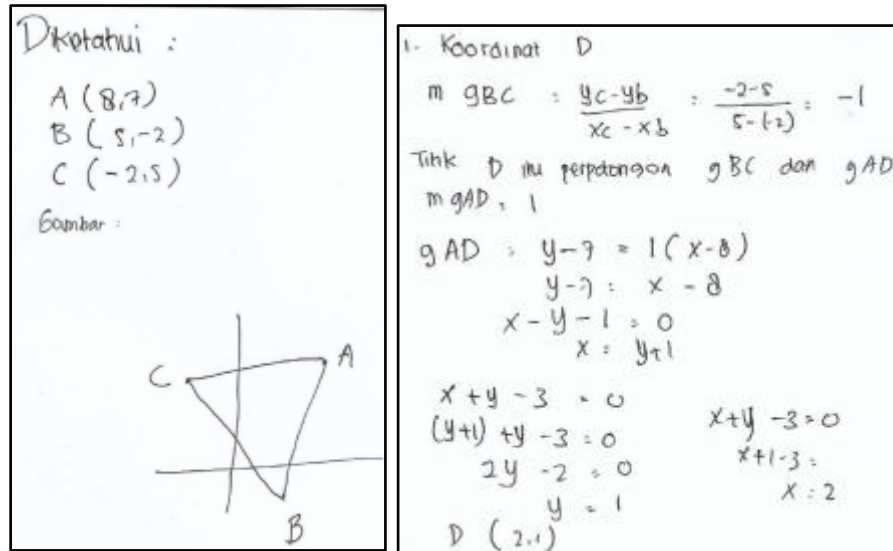


Figure 31. S-2 Sheet for Question 1 – Second Round Test

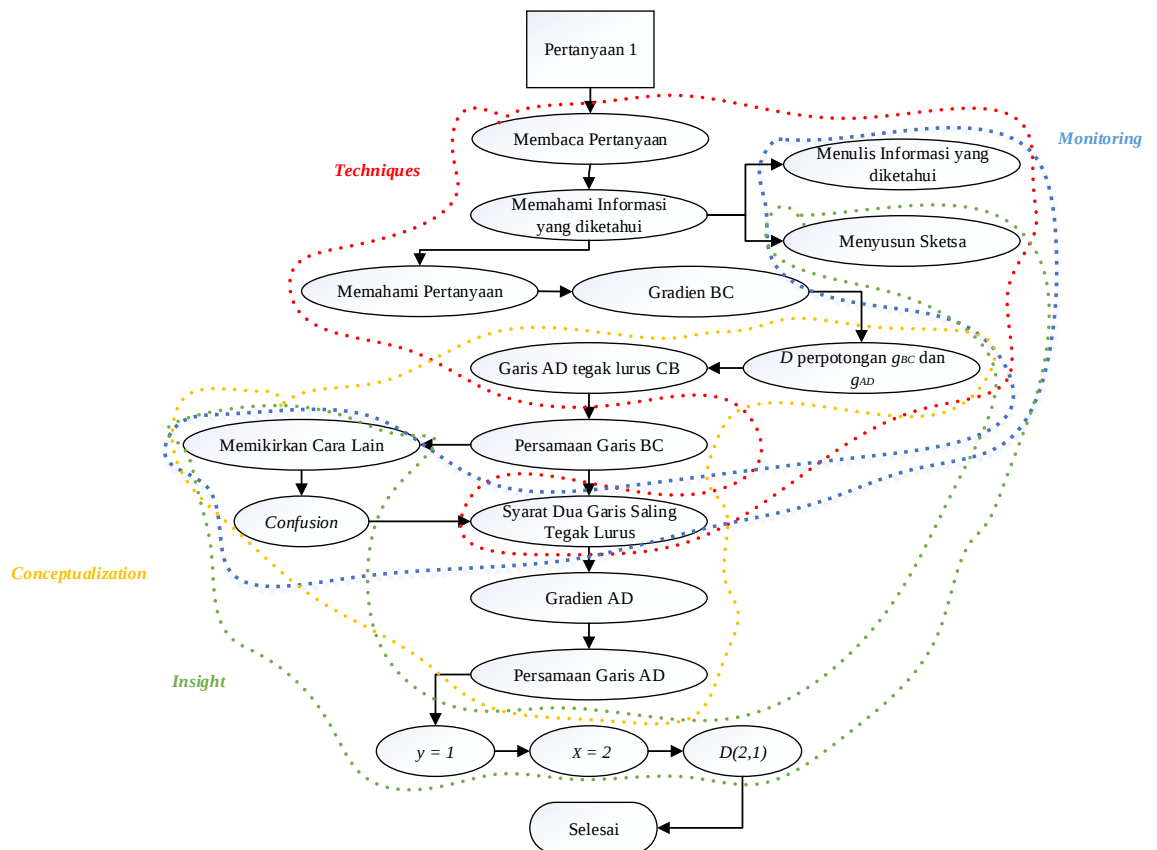


Figure 32. S-2 Reflective Thinking Structure for Question 1 – Second Round Test

2. H?

$g_{CE} \perp g_{AD}$

$$m_{g_{AB}} = \frac{y_b - y_a}{x_b - x_a} = \frac{-2-7}{5-8} = 3$$

$g_{CE} \perp g_{AB}$, $m_{g_{CE}} = -\frac{1}{3}$

$g_{AD}: y \pm y + 1$

$$g_{CE} = x + 3y - 13 = 0$$

$$(y+1) + 3y - 13 = 0$$

$$4y = 12$$

$$y = 3$$

$$x = 4$$

H (4, 3)

Figure 33. S-2 Sheet for Question 2 – Second Round Test

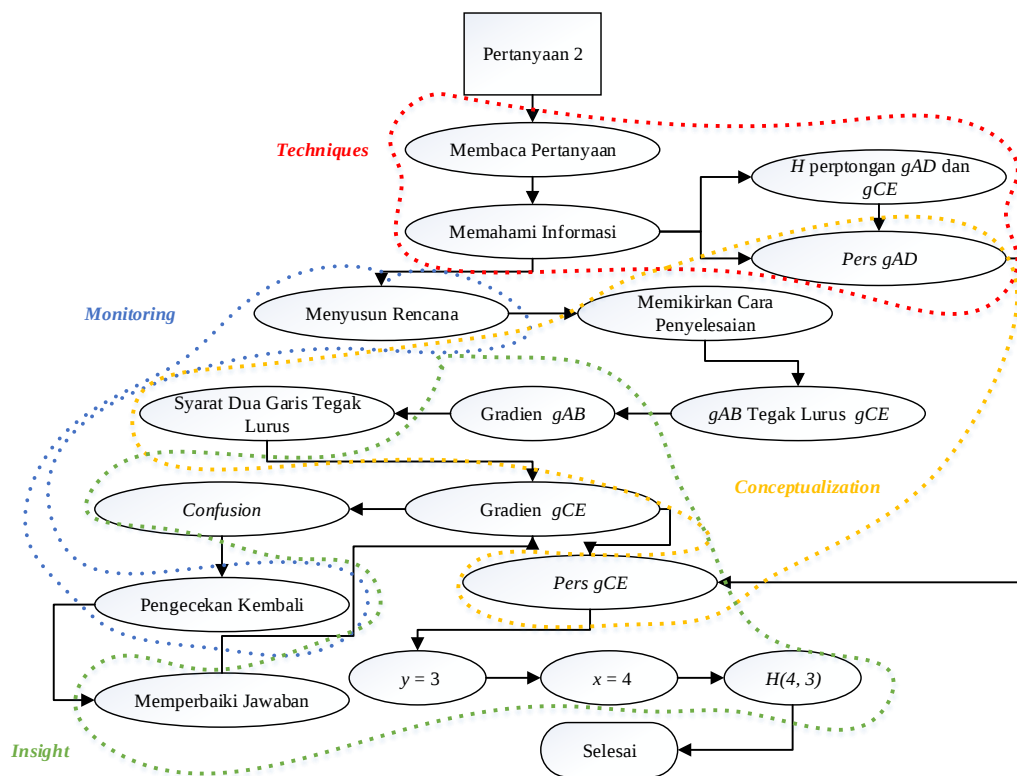


Figure 34. S-2 Reflective Thinking Structure for Question 2 – Second Round Test

3. Dik H dilalui garis AG

$$gAG: \frac{x+2}{8+2} = \frac{y+3}{7+3}$$

$$\frac{x+2}{10} = \frac{y+3}{10}$$

$$10x+20 = 10y+30$$

$$x+2 = y+3$$

$$x-y-1 = 0$$

D (2,1) $\rightarrow x-y-1 = 0$
 $(2-1-1) = 0$
 $0 = 0$
 D dilalui AG

H (4,3) $\rightarrow x-y-1 = 0$
 $4-3-1 = 0$
 $0 = 0$
 H juga dilalui oleh AG

Figure 35. S-2 Sheet for Question 3 – Second Round Test

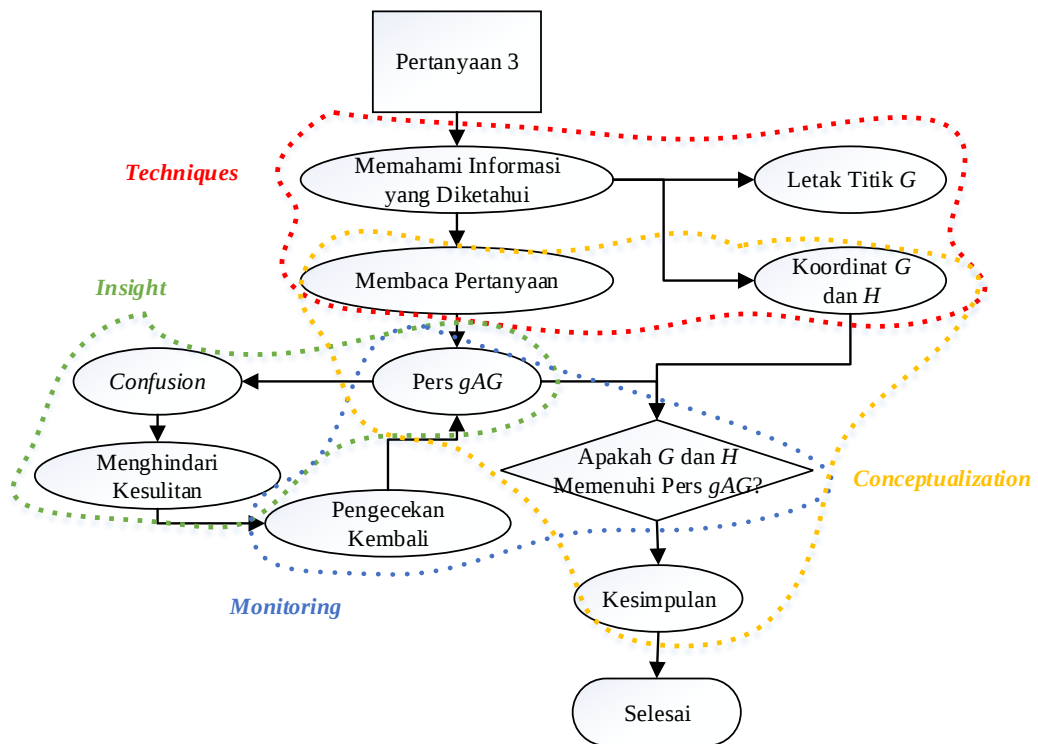


Figure 36. S-2 Reflective Thinking Structure for Question 3 – Second Round Test

$$\begin{aligned}
 &4. \quad DH : AH \\
 &1. \quad DH = \sqrt{(4-2)^2 + (3-1)^2} \\
 &\quad = \sqrt{4 + 4} \\
 &\quad = \sqrt{8} = 2\sqrt{2} \\
 &AH = \sqrt{(8-4)^2 + (3)^2} \\
 &\quad = \sqrt{16 + 9} \\
 &\quad = \sqrt{25} \\
 &\quad = 5\sqrt{1} \\
 &DH : AH = 2\sqrt{2} : 5\sqrt{1} \\
 &\quad = 1 : 2.5
 \end{aligned}$$

Figure 37. S-2 Sheet for Question 4 – Second Round Test

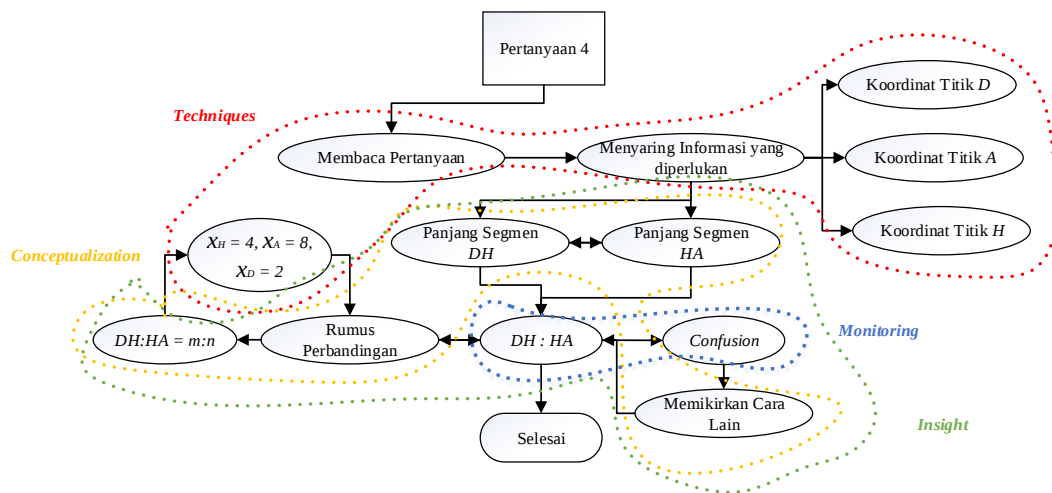


Figure 38. S-2 Reflective Thinking Structure for Question 4 – Second Round Test

Categorization of Math Prospective Teacher by Their End Semester Score

STUDENTS' ID	SCORE	CATEGORY
1	32	NOVICE
2	51	SUFFICIENT
3	66	PROFICIENT
4	32	NOVICE
5	36	NOVICE
6	66	PROFICIENT
7	57	SUFFICIENT
8	0	NOVICE
9	39	SUFFICIENT
10	51	SUFFICIENT
11	85	PROFICIENT
12	28	NOVICE
13	100	PROFICIENT
14	39	SUFFICIENT
15	58	SUFFICIENT
16	53	SUFFICIENT
17	100	PROFICIENT
18	100	PROFICIENT
19	30	NOVICE
20	39	SUFFICIENT
21	33	NOVICE
22	39	SUFFICIENT
23	97	PROFICIENT
24	36	NOVICE
25	59	SUFFICIENT
26	100	PROFICIENT
27	55	SUFFICIENT
28	41	SUFFICIENT
29	35	NOVICE
30	10	NOVICE
31	30	NOVICE
32	59	SUFFICIENT
33	48	SUFFICIENT
34	57	SUFFICIENT
35	11	NOVICE
36	21	NOVICE
37	59	SUFFICIENT
38	34	NOVICE
39	26	NOVICE
40	47	SUFFICIENT
41	53	SUFFICIENT

42	100	PROFICIENT
43	100	PROFICIENT
44	30	NOVICE
45	40	SUFFICIENT
46	67	PROFICIENT
47	100	PROFICIENT
48	77	PROFICIENT
49	76	PROFICIENT
50	73	PROFICIENT
51	24	NOVICE
52	38	NOVICE
53	93	PROFICIENT
54	39	SUFFICIENT
55	22	NOVICE
56	44	SUFFICIENT
57	53	SUFFICIENT
58	25	NOVICE
59	37	NOVICE
60	29	NOVICE
61	42	SUFFICIENT
62	50	SUFFICIENT
63	32	NOVICE
64	64	PROFICIENT
SUM	3267	-

AVERAGE	51,046875
STDEV	25,4161739
HAF STDEV	12,7080869
AV + HALF STDEV	63,7549619
AV -HAL STDEV	38,3387881