

Verkettat 1

1.



Strålin etu:

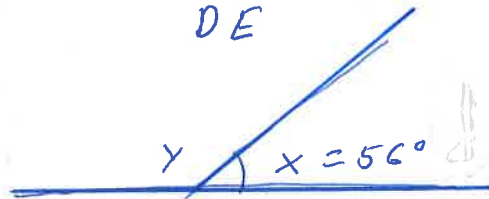
AB, AC, AD, AE

BC, BD, BE

CD, CE

DE

2.



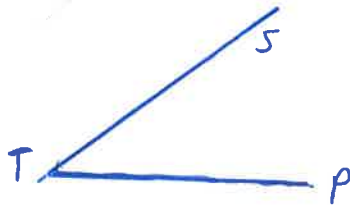
$$y + x = 180^\circ$$

$$y + 56^\circ = 180^\circ$$

$$\begin{array}{r} -56 \\ -56 \end{array}$$

$$\underline{y = 124^\circ}$$

3.



4.

grannhorn 1 = x
grannhorn 2 = $3x$

}

hörn
summa grannhorn är 180°

$$x + 3x = 180^\circ$$

$$4x = 180^\circ$$

$$x = 180/4 = \underline{45^\circ}$$

$$3x = 3 \cdot 45^\circ = \underline{135^\circ}$$

5.

hörnsumma lagshörn är 90°

$$9x - 5 + 4x + 4 = 90^\circ$$

$$13x - 1 = 90^\circ$$

$$\begin{array}{r} +1 \\ +1 \end{array}$$

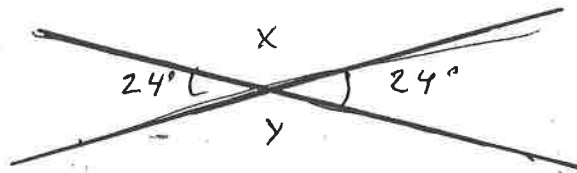
$$\underline{13x = 91^\circ}$$

$$x = 91/13 = 7^\circ$$

horn 1: $9x - 5 = 9 \cdot 7 - 5 = 63 - 5 = \underline{58^\circ}$

horn 2: $4x + 4 = 4 \cdot 7 + 4 = 28 + 4 = \underline{32^\circ}$

6.



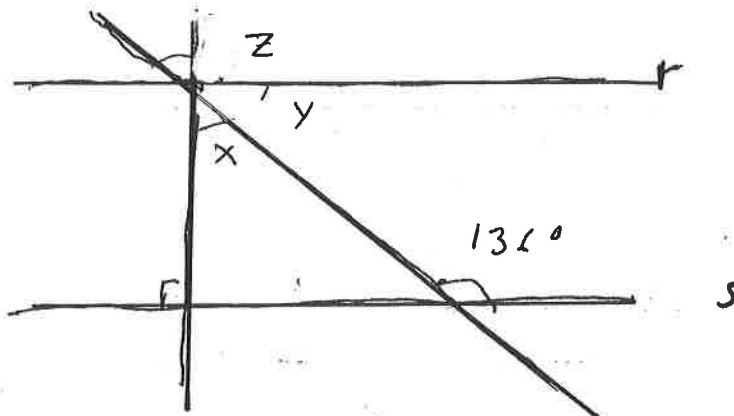
$$x + 24 = 180^\circ \quad \text{holnasumma grannhorna}$$

$$x = 180^\circ - 24^\circ = \underline{156^\circ}$$

$$y + 24 = 180^\circ \quad \text{holnasumma grannhorna}$$

$$y = 180^\circ - 24^\circ = \underline{156^\circ}$$

7.



r || s

①

$$\underline{Z = 136^\circ} \quad \text{einslæg horn við samræðar línu}$$

②

$$Z + x = 180^\circ \quad \text{holnasumma grannhorna}$$

$$136^\circ + x = 180^\circ$$

$$x = 180^\circ - 136^\circ = \underline{44^\circ}$$

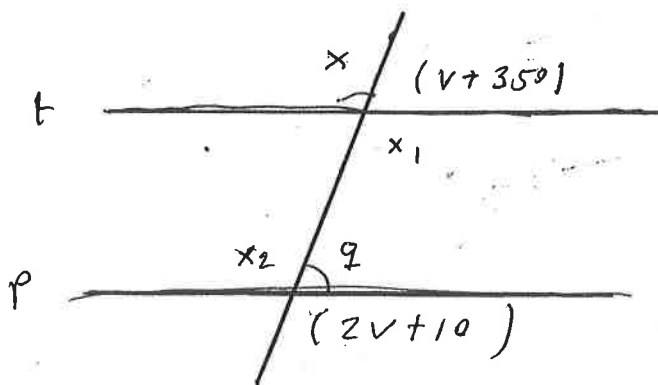
③

$$x + y = 90^\circ \quad \text{lags horn}$$

$$x + 44 = 90^\circ$$

$$x = 90 - 44 = \underline{46^\circ}$$

8.



t || p

①

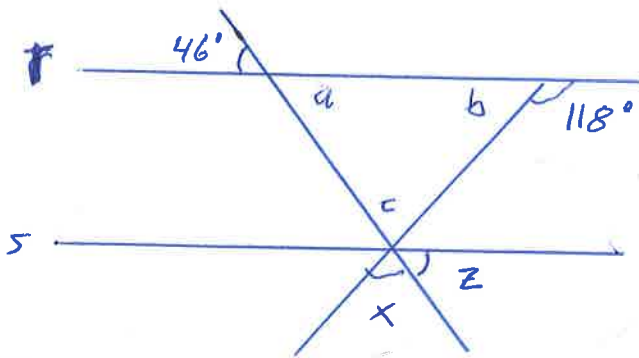
$$v + 35^\circ = q$$

einslæg horn

- 8.
- ① $q = v + 35^\circ$ einslag horn vid same side linjer
 - ② $x = x_1$ topp horn
 - ③ $x_1 = 2v + 10^\circ$ einslag horn vid same side linjer
 - ④ $x = 2v + 10^\circ$
 - ⑤ $x = x_2$ einslag horn vid same side linjer
 - ⑥ $x + q = 180^\circ$ hornsumma grannhorn
 innsättning i x og q
 $2v + 10^\circ + v + 35^\circ = 180^\circ$
 $3v + 45^\circ = 180^\circ$
 $\frac{3v}{3} = \frac{135}{3}$
 $v = 45^\circ$
 - ⑦ $x = 2v + 10 = 2 \cdot 45^\circ + 10^\circ = 90 + 10 = \underline{100^\circ}$
 - ⑧ $q = v + 35^\circ = 45^\circ + 35^\circ = \underline{80^\circ}$

Verkefni 1

9.



$r \parallel s$

- ① $z = 46^\circ$ Topphorn eru jafnstór við samsíða lína.
- ② $x + z = 118^\circ$ einslaeg horn við samsíða línu
 $x + 46 = 118$
 $\quad -46 \quad -46$

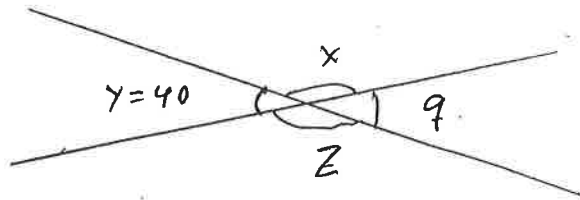
 $x = 72^\circ$

Önnur og Lengri aðferð

- ① $a = 46^\circ$ Topphorn.
- ② $b + 118 = 180^\circ$ hornasúmma grunnhorna
 $b = 180 - 118 = \underline{62^\circ}$
- ③ $c + a + b = 180^\circ$ hornasúmma þríhyrnings
 $c + 46^\circ + 62^\circ = 180^\circ$
 $c + 108^\circ = 180^\circ$
 $\quad -108^\circ \quad -108^\circ$

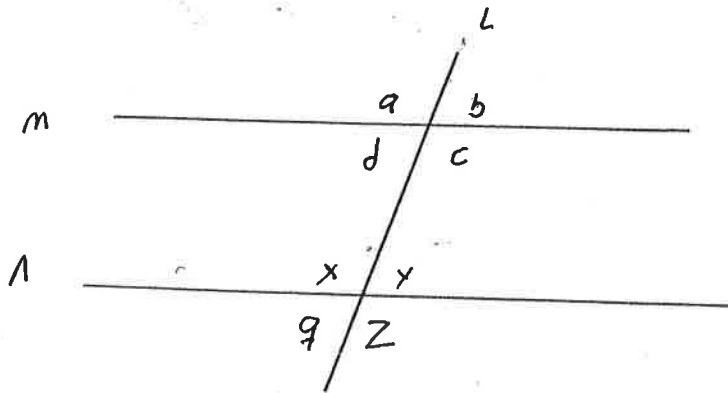
 $c = 72^\circ$
- ④ $x = c = 72^\circ$ Topphorn.

10.



- a) $x + 40^\circ = 180^\circ$ *hoinasamma grunnhorn*
 $\quad \quad \quad -40^\circ \quad \quad -40$
 $x = 140^\circ$
- b) x og y eru grunnhorn.
- c) $z = x = 140^\circ$ Topphorn eru jafnstóð
- d) x og z eru topphorn
- e) x og q eru grunnhorn.

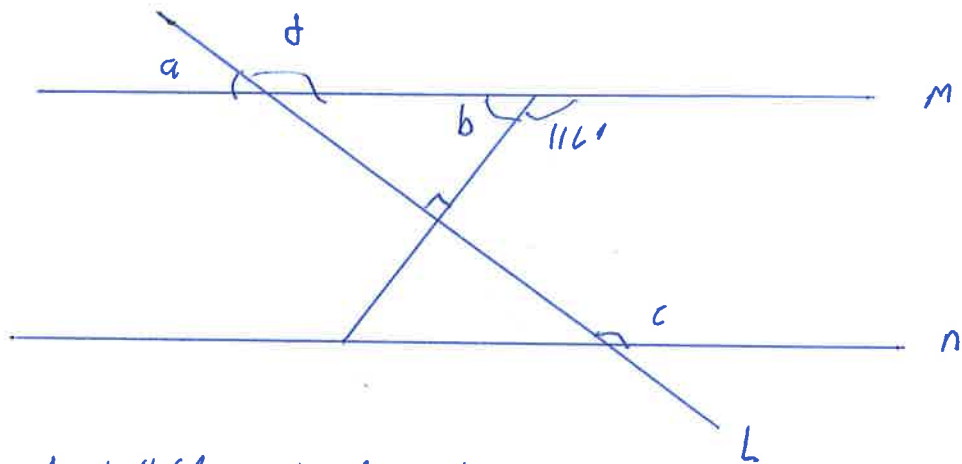
11.



$m \parallel n$

- a og x eru einslæg horn
- hornið c og z eru líka einslæg hornin x
þar sem þau eru jafnstór
at því að $c = x$ Topphorn.
- og $z = x$ Topphorn

12.



① $b + 116^\circ = 180^\circ$ Hornasumma grannhorn
 $\quad \quad \quad -116^\circ \quad -116^\circ$
 $b = 64^\circ$

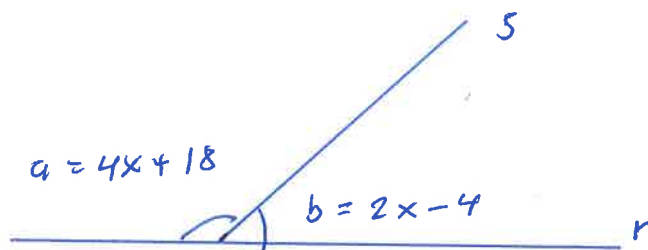
② $d = b + 90^\circ$ Utanvert horn
 $d = 64^\circ + 90^\circ = \underline{154^\circ}$

③ $a + d = 180^\circ$ Hornasumma grannhorn
 $a + 154 = 180$
 $\quad \quad \quad -154 \quad -154$

 $a = 26^\circ$

④ $c = d = 154^\circ$ Einslegg horn við sameide linjur

13.



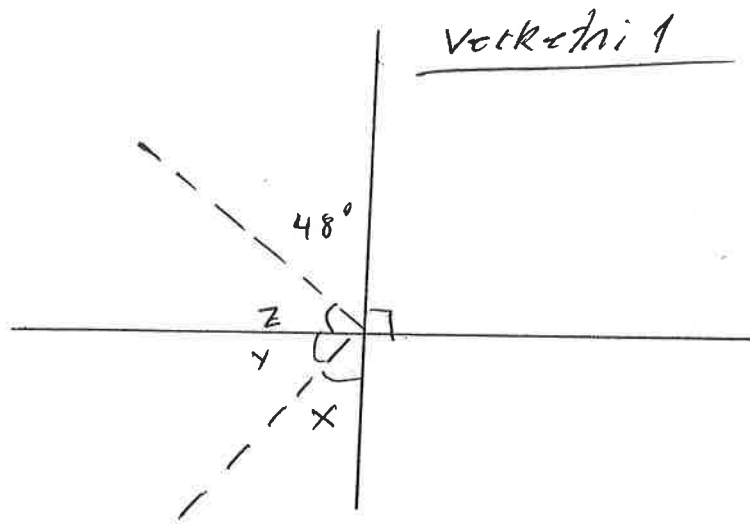
① $a + b = 180^\circ$ Hornasumma grannhorn $\frac{2}{3}$
 $4x + 18^\circ + 2x - 4^\circ = 180^\circ$ ②
 $a = 4 \cdot 27\frac{2}{3} + 18 = 110,68 + 18^\circ = \underline{128,68^\circ}$

$$\begin{array}{r} 6x + 14^\circ = 180^\circ \\ -14 \quad -14 \\ \hline 6x = 166^\circ \\ \frac{6x}{6} = \frac{166^\circ}{6} \end{array}$$

$$\frac{6x}{6} = \frac{166^\circ}{6}$$

$$x \approx 27,67^\circ = 27\frac{1}{6} = 27\frac{2}{3} \quad b = 2 \cdot x - 4 = 2 \cdot 27,67 - 4 = 51,34^\circ$$

14.



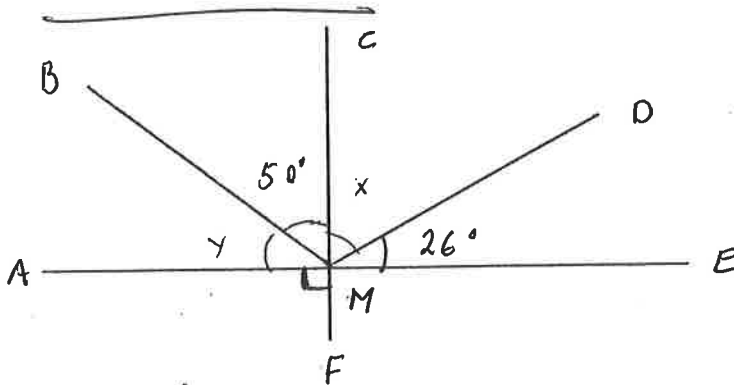
① $y + z = 90^\circ$ *lajshoon*

② $x + (y + z) + 48^\circ = 180^\circ$ *Hornasumma grunnborn*
 $x + 90^\circ + 48^\circ = 180^\circ$
 $x + 138^\circ = 180^\circ$
 $-138^\circ \quad -138^\circ$
 $x = 42^\circ$

③ $x + y = 90^\circ$ *rött horn*
 $42 + y = 90^\circ$
 $-42 \quad -42$
 $y = 48^\circ$

④ $z + 48^\circ = 90^\circ$ *rött horn*
 $-48^\circ \quad -48^\circ$
 $z = 42^\circ$

15.



① $x + 26^\circ = 90^\circ$ *rött horn*
 $-26 \quad -26$
 $x = 64^\circ$

② $y + 50^\circ = 90^\circ$ *rött horn*
 $-50 \quad -50$
 $y = 40^\circ$

a) $BMA = y = 40^\circ$

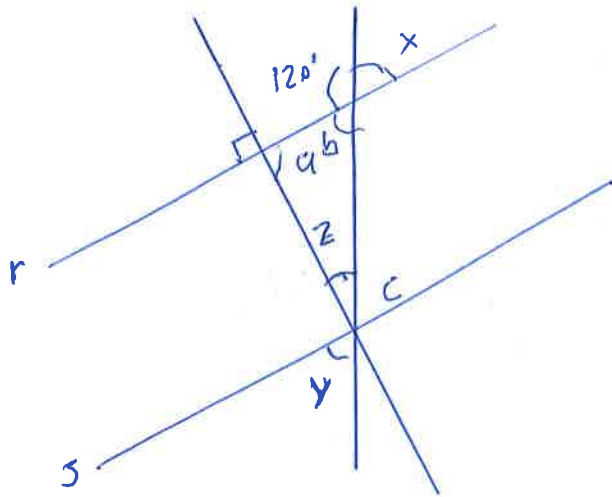
b) $CMD = x = 64^\circ$

c) $BMD = 50^\circ + 64^\circ = 114^\circ$

d) $AMD = 40^\circ + 50^\circ + 64^\circ = 154^\circ$

Verketti 1

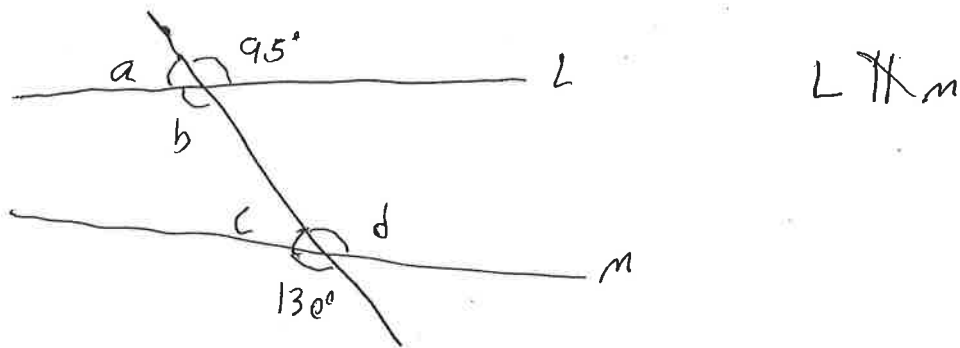
16.



$r \parallel s$

- ① $x + 120^\circ = 180^\circ$ Hoknasamma grunnhornna
 $\quad \quad \quad -120^\circ \quad -120^\circ$
 $x = 60^\circ$
- ② $a = 90^\circ$ Topp horn
- ③ $b = x = 60^\circ$ Topp horn
- ④ $z + 90^\circ + 60^\circ = 180^\circ$ Hoknasamma prikyrning
 $z + 150^\circ = 180^\circ$
 $\quad \quad \quad -150^\circ \quad -150^\circ$
 $z = 30^\circ$
- ⑤ $y = x = 60^\circ$ Topp horn. på sen $r \parallel s$
ónær. Leit
 $c + z = 90^\circ$ lagshorn
 $c + 30^\circ = 90^\circ$
 $\quad \quad \quad -30^\circ \quad -30^\circ$
 $c = 60^\circ$
 $y = c = 60^\circ$ Topp horn

17.



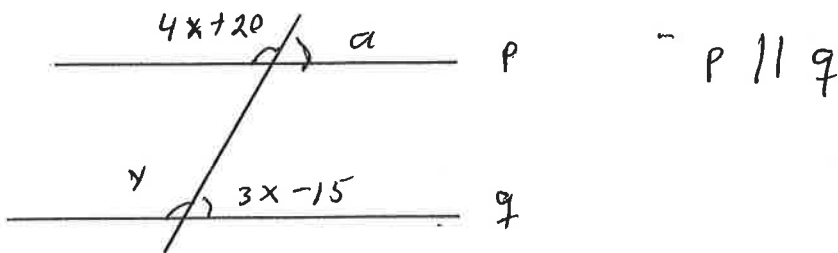
① $a + 95 = 180^\circ$ hornasumma grannhorna
 $\begin{array}{r} a + 95 = 180^\circ \\ -95 \quad -95 \\ \hline a = 85^\circ \end{array}$

② $b = 95$ Topphorn

③ $d = 130^\circ$ Topphorn

④ $c + d = 180^\circ$ Hornasumma grannhorna
 $\begin{array}{r} c + 130^\circ = 180^\circ \\ -130^\circ \quad -130^\circ \\ \hline c = 50^\circ \end{array}$

18.



① $a = 3x - 15$ einslæg horn við samsíða línu

② $4x + 20 + 3x - 15 = 180^\circ$ Hornasumma grannhorna

$$\begin{array}{r} 4x + 20 + 3x - 15 = 180^\circ \\ -3x \quad -3x \\ \hline 7x + 5 = 180^\circ \\ -5 \quad -5 \\ \hline 7x = 175^\circ \end{array}$$

$$\frac{7x}{7} = \frac{175^\circ}{7}$$

$$x = 25^\circ$$

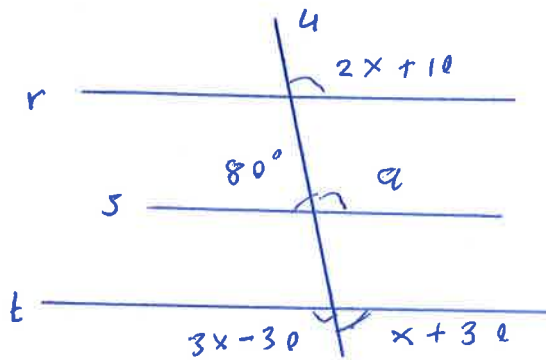
③ $y = 4x + 20$ einslæg horn við samsíða línu

$$y = 4 \cdot 25 + 20 = 100 + 20$$

$$y = 120^\circ$$

Verkefni 1

19.



① $3x - 30 + x + 30 = 180$ Hornasumma grannhorna

$$\frac{4x}{4} = \frac{180}{4}$$

$$\underline{x = 45^\circ}$$

② $2x + 10 = 2 \cdot 45 + 10 = 90 + 10 = \underline{100^\circ}$

③ $x + 30 = 45 + 30 = \underline{75^\circ}$

④ $2x + 10 \neq x + 30$
 $100^\circ \neq 75^\circ$ } \rightarrow hornin eru ekki einslæg og þar af leiðandi eru línurnar t og t ekki samsíða

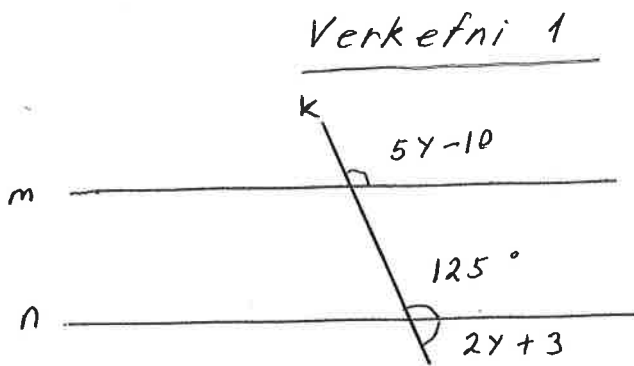
⑤ $\begin{array}{l} 80 + a = 180 \\ -80 \quad -80 \end{array}$ Hornasumma grannhorna

$$\underline{a = 100^\circ}$$

⑥ $a = 100^\circ = 2x + 10 \rightarrow$

Hornin a og $2x + 10$ eru einslæg og þar af leiðandi eru línurnar t og s samsíða \rightarrow $t \parallel s$

20.



① $2y + 3 + 125 = 180$ Hornasumma grannhorna

$$\begin{array}{r} 2y + 125 = 180 \\ -125 \quad -125 \\ \hline \end{array}$$

$$\frac{2y}{2} = \frac{52}{2}$$

$$y = 26$$

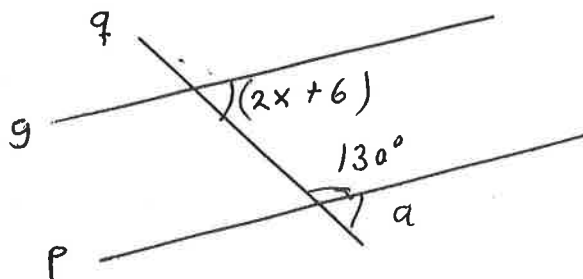
② $5y - 10 = 5 \cdot 26 - 10 = 130 - 10 = 120$

③ $2y + 3 = 2 \cdot 26 + 3 = 52 + 3 = 55$

④ $5y - 10 \neq 2y + 3$

$120 \neq 55 \rightarrow$ Þar sem hornin eru ekki jafn stór þá eru þau ekki einslæg horn og þar af leiðandi eru línurnar m og n ekki samsíu

21.



g || p

① $(2x + 6) + 130 = 180$ Hornasumma frændhorna

$$\begin{array}{r} 2x + 136 = 180 \\ -136 \quad -136 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{44}{2}$$

$$x = 22$$

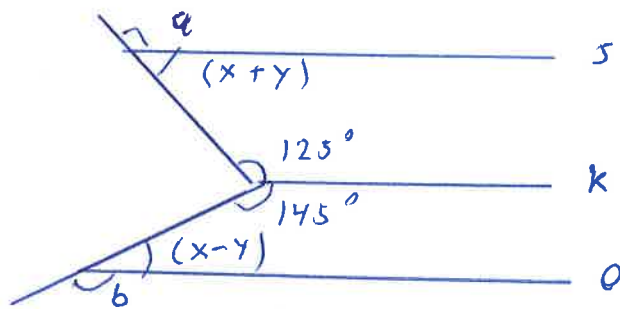
② Önnur leið

$a = 2x + 6$ einslæg horn

③ $2x + 6 + 130 = 180$ Hornasumma grannhorna

Verkefni 1

22.



$s \parallel k \parallel o$

① $a = 125^\circ$ einslæg horn

②
$$\begin{array}{r} 125 + x + y = 180^\circ \\ -125^\circ \qquad -125^\circ \\ \hline x + y = 55^\circ \end{array}$$
 Hornasumma grannhorna

③ $b = 145^\circ$ einslæg horn

④
$$\begin{array}{r} x - y + 145^\circ = 180^\circ \\ -145^\circ \qquad -145^\circ \\ \hline x - y = 35^\circ \end{array}$$
 Hornasumma grannhorna

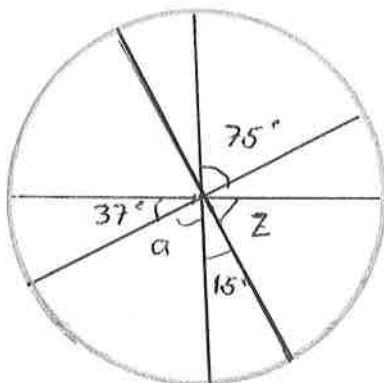
⑤
$$\left. \begin{array}{l} x + y = 55^\circ \\ + \quad x - y = 35^\circ \end{array} \right\} \text{Leysum jöfnurnar}$$

$$\frac{2x}{2} = \frac{90^\circ}{2}$$

$$x = 45^\circ$$

⑥
$$\begin{array}{r} x + y = 55^\circ \\ 45^\circ + y = 55^\circ \\ -45^\circ \qquad -45^\circ \\ \hline y = 10^\circ \end{array}$$

23.



① $a = 75^\circ$ Topphorn

②
$$Z + 15^\circ + a + 37^\circ = 180^\circ$$
 Hornasumma grannh.

$$Z + 15^\circ + 75^\circ + 37^\circ = 180^\circ$$

$$Z + 127^\circ = 180^\circ$$

$$\underline{Z = 53^\circ}$$