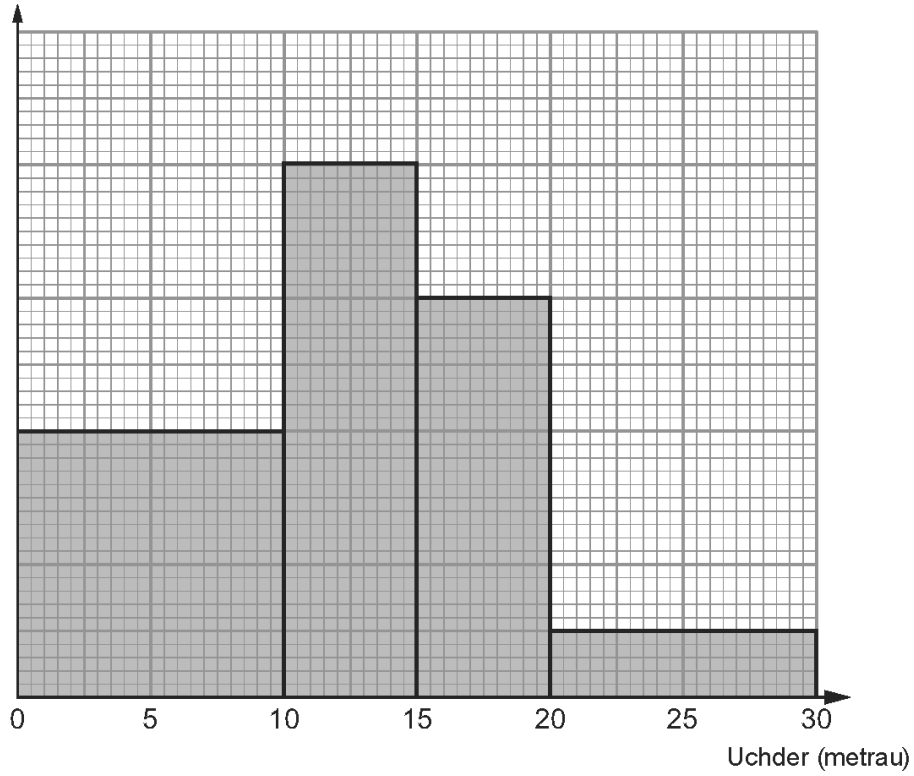


Histogramau

1.

Mae'r histogram yn dangos dosraniad uchder 240 o goed mewn coedwig, mewn metrau.

Dwysedd amllder



Faint o goed oedd ag uchder rhwng 10 ac 15 metr?

[3]

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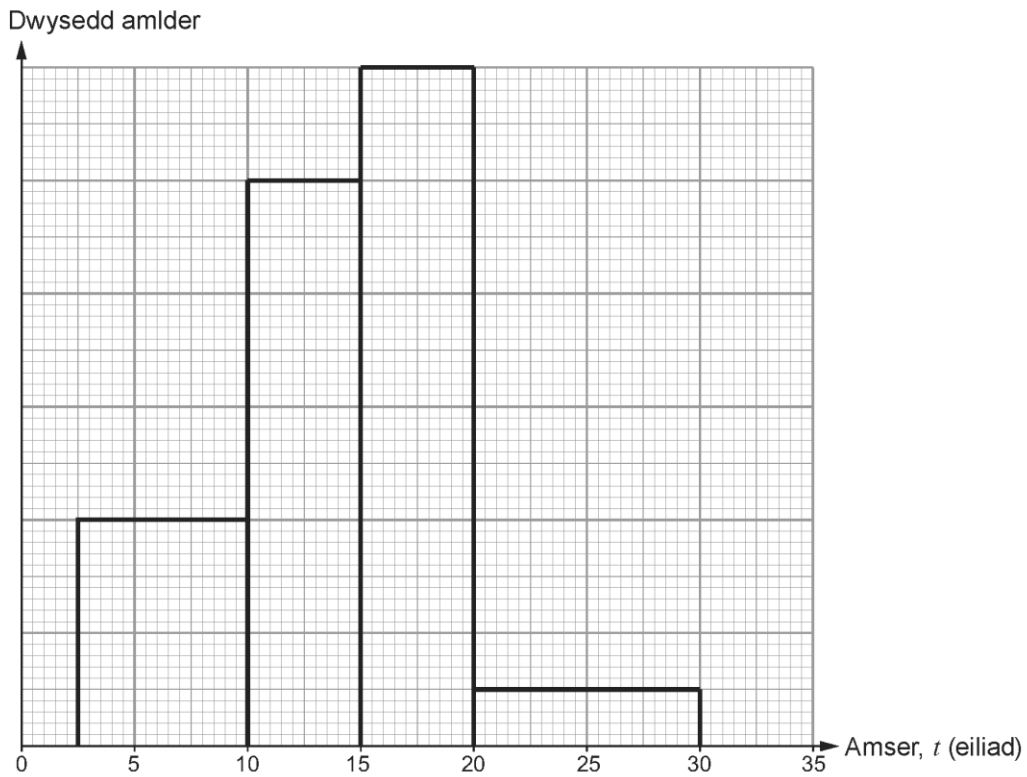
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2.

- (a) Mewn archfarchnad, mae rhywun yn cofnodi'r amser mae cwsmeriaid yn ei gymryd i sganio 5 eitem eu hunain yn y man talu.
 Mae histogram sy'n dangos y canlyniadau i'w weld isod.
 Yn anffodus, mae'r raddfa ar echelin y dwysedd amlder ar goll.



Rydych chi'n gwybod bod 6 unigolyn yn cymryd rhwng 15 a 20 eiliad i sganio eu 5 eitem.

- (i) Cwblhewch y raddfa ar echelin y dwysedd amlder. [3]

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- (ii) Faint o bobl sydd wedi cael eu hamseru yn sganio eu 5 eitem? [2]

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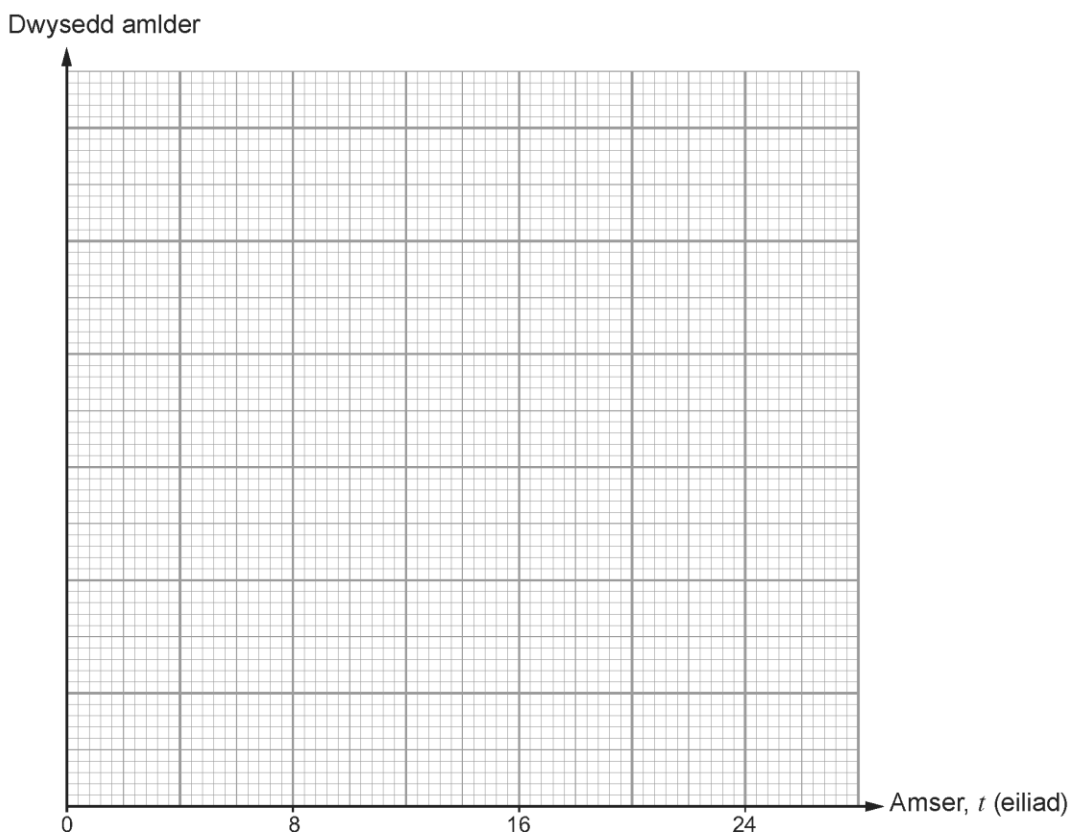
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- (b) Hefyd mae rhywun yn cofnodi'r amser mae staff yn ei gymryd i sganio 5 eitem.
Mae'r tabl isod yn dangos y canlyniadau.

Amser, t (eiliad)	$0 < t \leq 4$	$4 < t \leq 8$	$8 < t \leq 12$	$12 < t \leq 16$	$16 < t \leq 24$
Nifer y staff	0	2	24	8	4

Cwblhewch y raddfa ar echelin y dwysedd amllder a lluniadwch histogram i ddangos y dosraniad ar y papur graff isod. [3]

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- (c) Ar gyfartaledd, pa un o'r ddau grŵp o bobl, cwsmeriaid neu staff, yw'r cyflymaf yn sganio 5 eitem?
Ticiwch y blwch priodol.

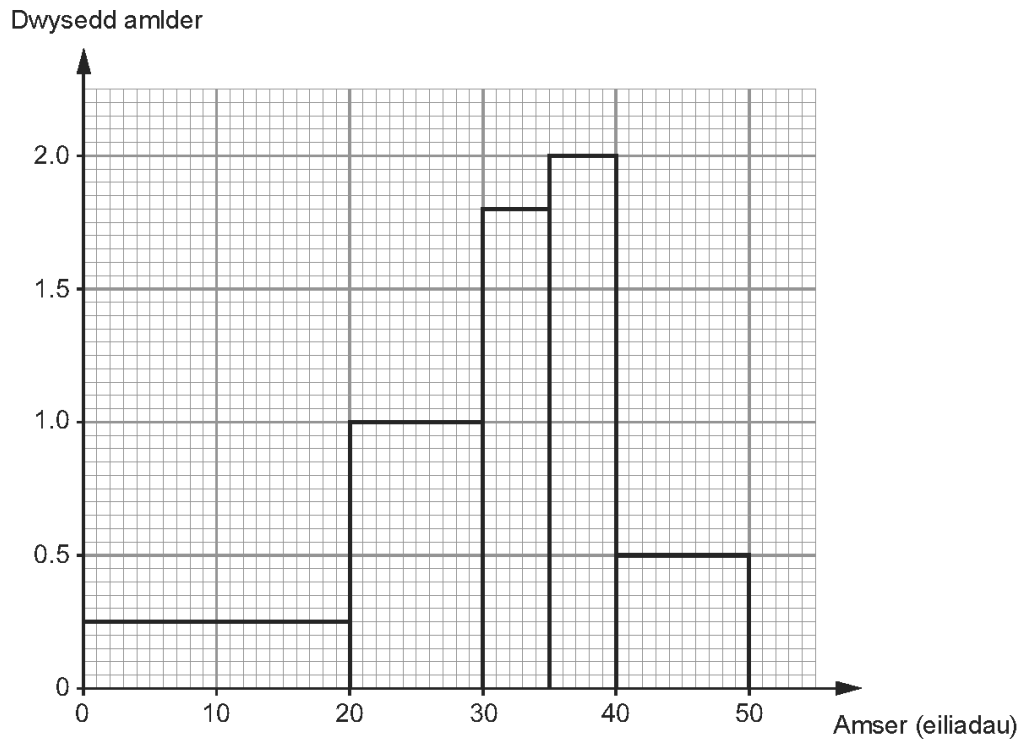
Cwsmeriaid Staff

Rhaid i chi ddefnyddio'r histogramau i esbonio eich ateb. [1]

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3.

Mae'r histogram yn dangos yr amserau gafodd eu cymryd gan bobl mewn grŵp i adael trên.



(a) Cyfrifwch nifer y bobl yn y grŵp. [3]

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(b) Cyfrifwch amcangyfrif ar gyfer nifer y bobl gymerodd fwy na 37 eiliad i adael y trên. [2]

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(c) Mewn gwirionedd, doedd neb wedi gadael y trên mewn llai na 10 eiliad. Eglurwch sut dylai'r histogram hwn gael ei newid i gymryd y wybodaeth hon i ystyriaeth. [1]

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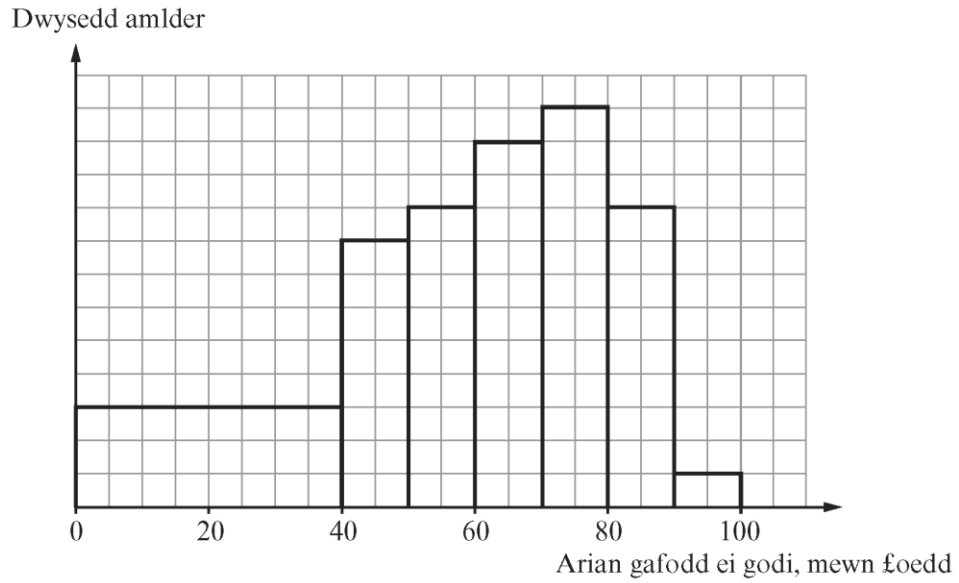
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4.

Trefnodd Jack raffl i godi arian.

Mae ef wedi lluniadu histogram i ddangos dosraniad yr arian gafodd ei godi o'r raffl.



Mae Jack wedi anghofio ysgrifennu'r raddfa ar yr echelin fertigol.

Mae e'n gwybod y gwnaeth pob un o 40 o bobl godi £50 neu lai yr un.

Cyfrifwch amcangyfrif ar gyfer cyfanswm yr arian gafodd ei godi.

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[6]

5.

- (ch) Mae'r tabl isod yn dangos nifer y munudau dreuliodd grŵp gwahanol o bobl yn gwylio rhaglenni gafodd eu darlledu gan *Hafod West TV* ddydd Gwener diwethaf.

Amser (t munud)	Amllder
$0 \leq t < 100$	6
$100 \leq t < 200$	36
$200 \leq t < 300$	24
$300 \leq t < 500$	4
$500 \leq t < 800$	6

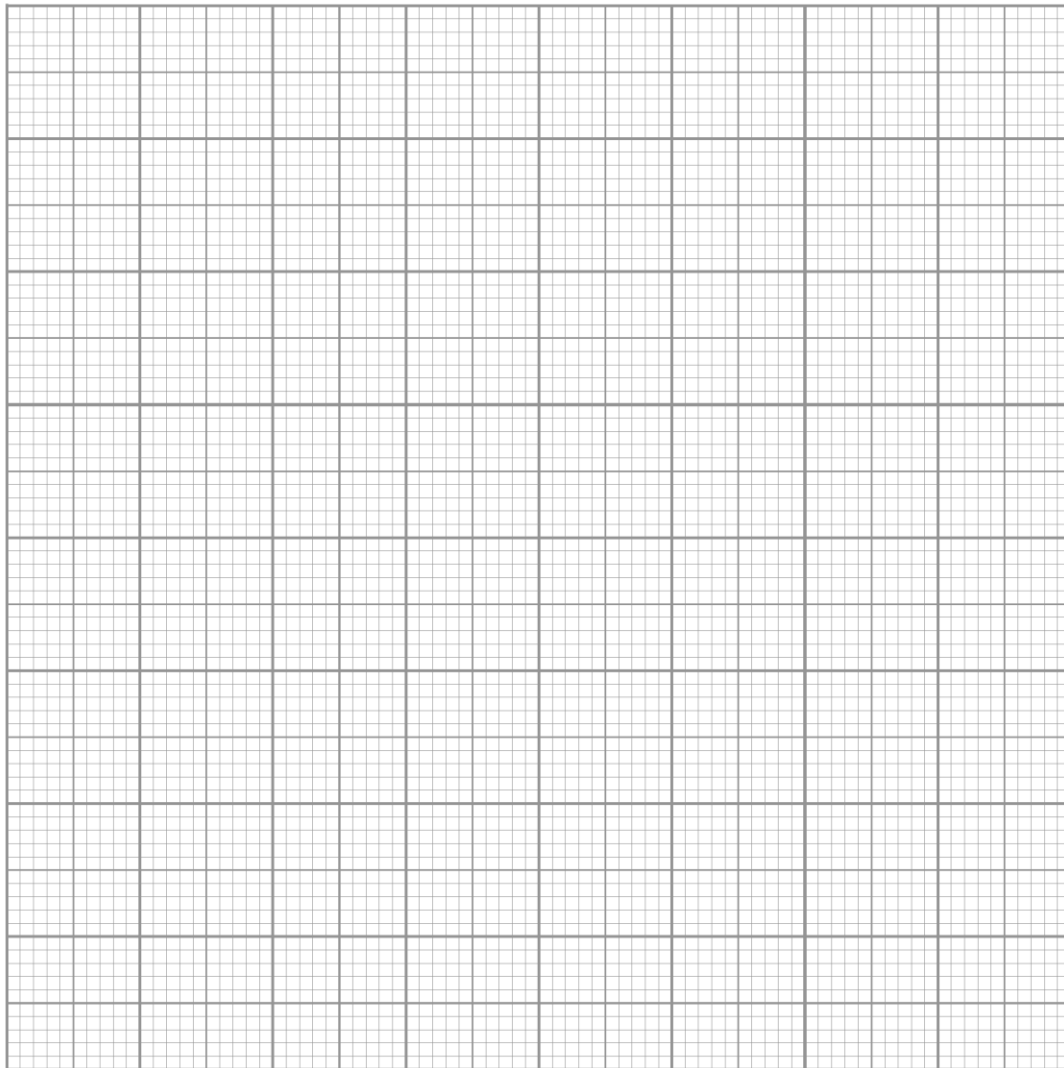
- (i) Lluniadwch histogram, ar y papur graff gyferbyn, i gynrychioli'r data hyn. [3]

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- (ii) Dangoswch y canolrif ar eich histogram.
Dangoswch sut gwnaethoch chi benderfynu ble dylai'r canolrif gael ei roi ar yr histogram. [3]

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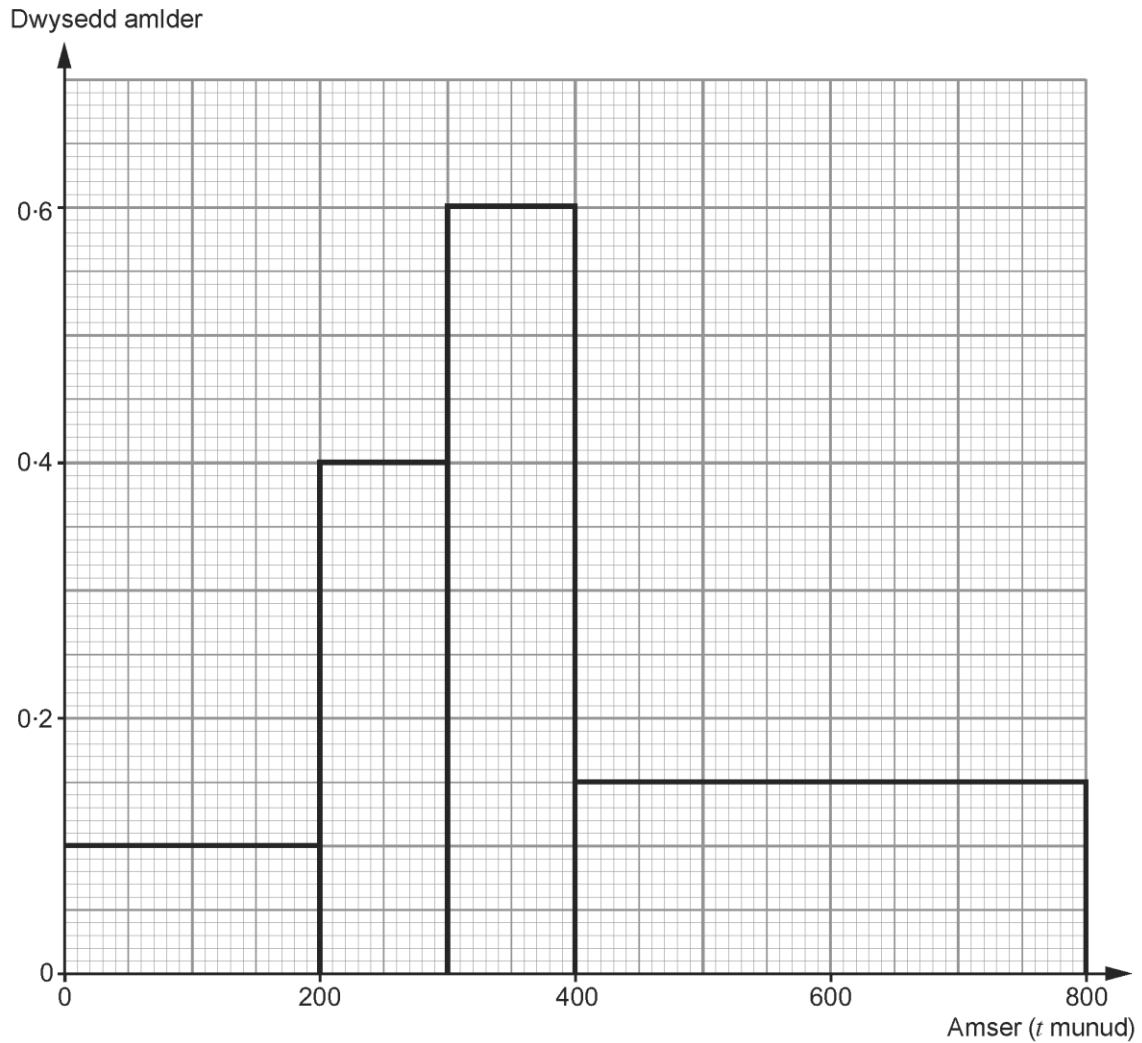
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- (d) Ar ôl gofyn i nifer o bobl lenwi holiadur, cyhoeddodd *Hafod West TV* yr histogram sy'n cael ei ddangos isod.
Mae'n darlunio nifer y munudau dreuliodd grŵp o bobl yn gwyllo rhaglenni gafodd eu darlledu ar sianeli teledu eraill ddydd Gwener diwethaf.



- (i) Faint o bobl atebodd yr holiadur? [3]

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- (ii) Faint o bobl dreuliodd lai na 250 o funudau yn gwyllo'r sianeli eraill hyn ddydd Gwener diwethaf? [2]

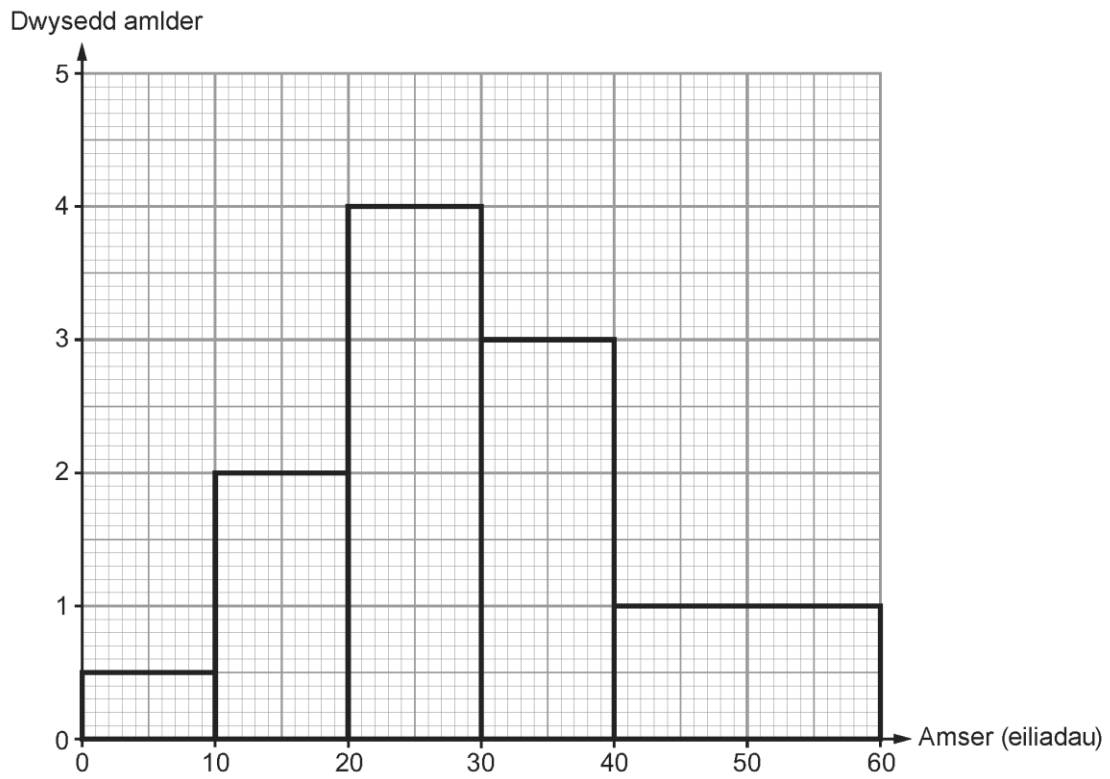
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6.

Mae sinema yn ymchwilio i'r amser mae'n ei gymryd i bobl gael gwasanaeth wrth y ddesg dalu. Gwnaethon nhw gynnal arolwg rhwng 2 p.m. a 2:30 p.m. un dydd Iau. Mae'r histogram yn dangos canlyniadau'r arolwg.



(a) Faint o bobl gafodd wasanaeth wrth y ddesg dalu? [3]

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..... o bobl

(b) Cyfrifwch amcangyfrif am nifer y bobl gafodd wasanaeth mewn llai nag 12.5 eiliad. [2]

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..... o bobl

(c) Targed y sinema yw rhoi gwasanaeth i 80% o bobl mewn llai na 40 eiliad y person. Faint yn fwy o bobl na'r targed gafodd wasanaeth mewn llai na 40 eiliad? [3]

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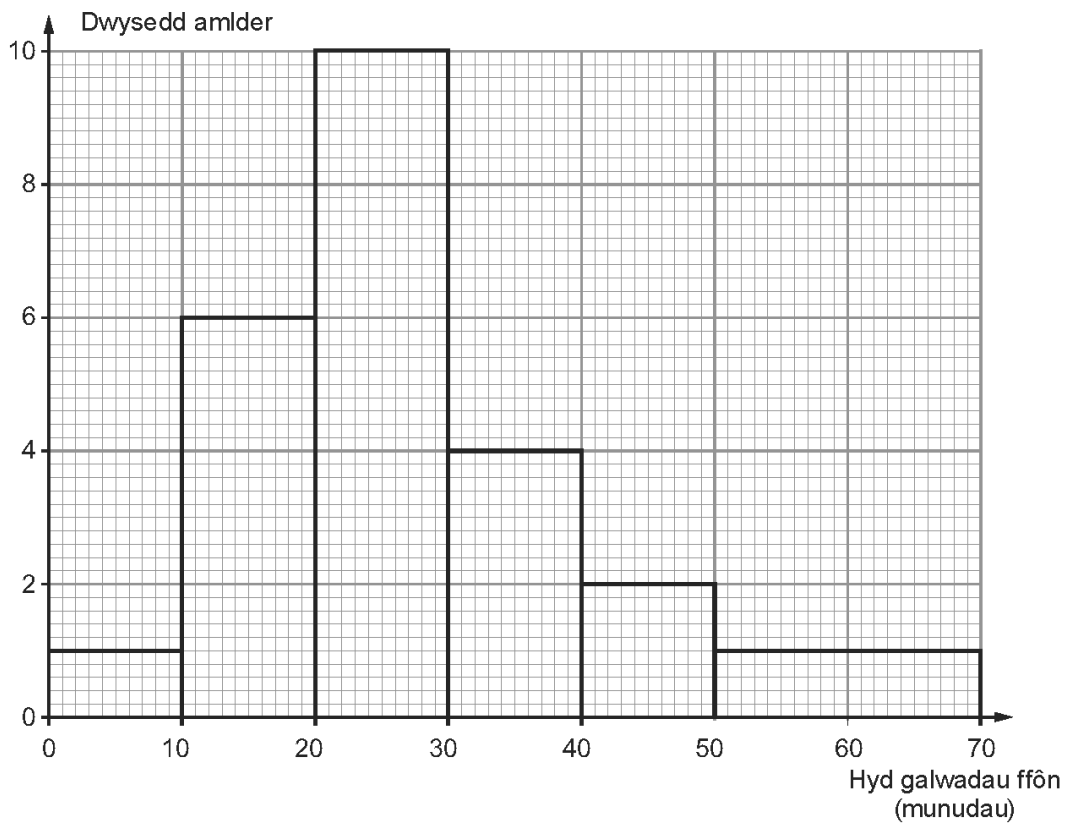
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..... yn fwy o bobl na'r targed

7.

Mae'r histogram yn darlunio hyd galwadau ffôn gafodd eu gwneud i linell gymorth cyfrifiaduron yn ystod un nos Wener.



- (a) Cyfrifwch faint o alwadau ffôn gafodd eu gwneud i'r llinell gymorth cyfrifiaduron yn ystod y nos Wener. [3]

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- (b) Cyfrifwch amcangyfrif o'r canran o alwadau ffôn oedd yn para'n hirach na $\frac{3}{4}$ awr. [2]

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- (c) Amcangyfrifwch hyd canolrifol galwad ffôn gafodd ei gwneud i'r llinell gymorth cyfrifiaduron yn ystod y nos Wener. Rhowch eich ateb yn gywir i 1 lle degol. [3]

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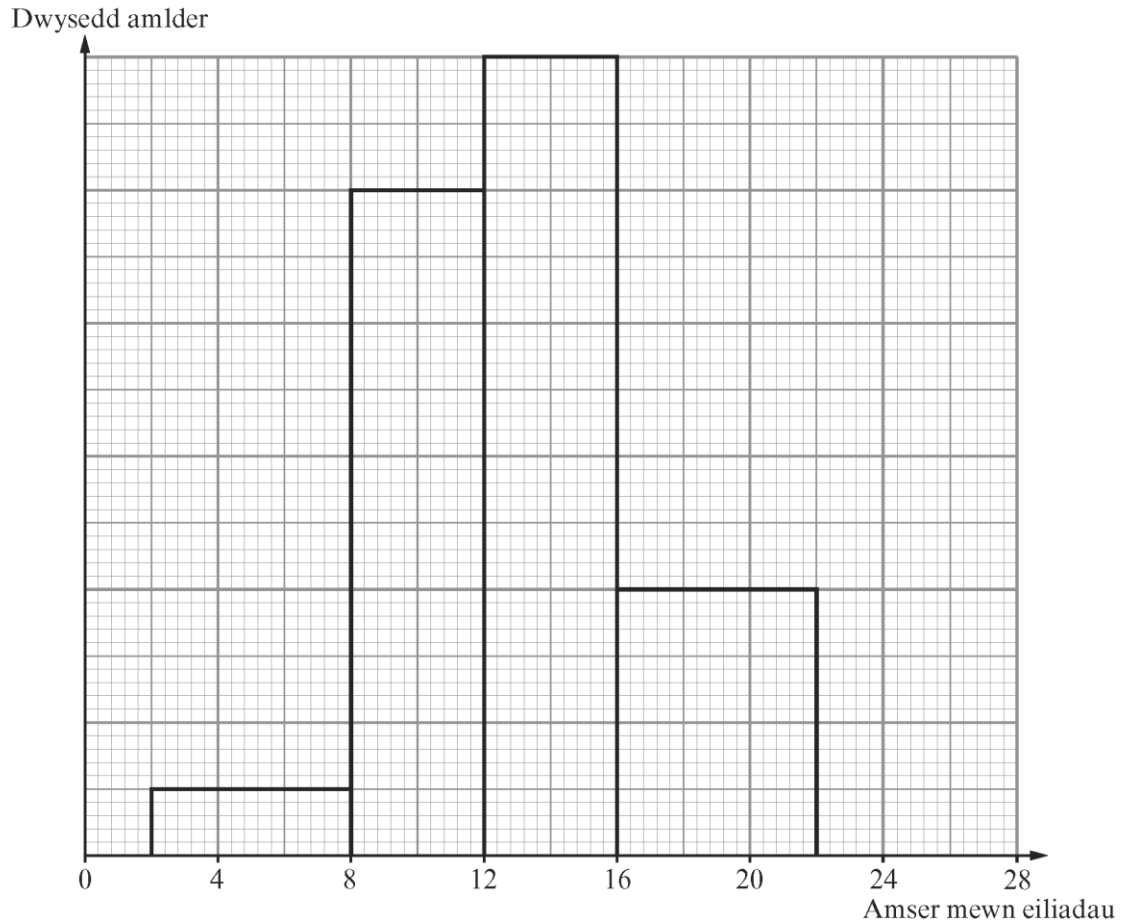
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8.

- (a) Fel rhan o ymarfer rheoli ansawdd (*quality control exercise*) mewn uwchfarchnad, cafodd yr amser y gwnaeth pob gweithiwr dan 40 oed ei gymryd i sganio 20 eitem ei fesur. Mae allbrint (*printout*) o'r histogram sy'n darlunio'r canlyniadau yn cael ei ddangos isod.



Yn affodus, roedd labelu echelin y dwysedd amlder ar goll o'r allbrint. Rydyn ni'n gwybod bod 12 gweithiwr dan 40 oed wedi cymryd mwy nag 16 eiliad i sganio'r 20 eitem.

- (i) Cwblhewch labelu'r raddfa ar echelin y dwysedd amlder.

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[3]

- (ii) Cyfrifwch faint o weithwyr dan 40 oed oedd yn cymryd rhan yn yr ymarfer rheoli ansawdd hwn.

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[2]

- (iii) Cyfrifwch amcangyfrif o'r amser canolrifol y gwnaeth gweithiwr dan 40 oed ei gymryd i sganio 20 eitem.

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[4]

- (b) Fel rhan o'r ymarfer rheoli ansawdd mewn uwchfarchnad, cafodd yr amser y gwnaeth pob gweithiwr 40 oed neu fwy ei gymryd i sganio 20 eitem ei fesur. Mae'r tabl isod yn dangos y canlyniadau.

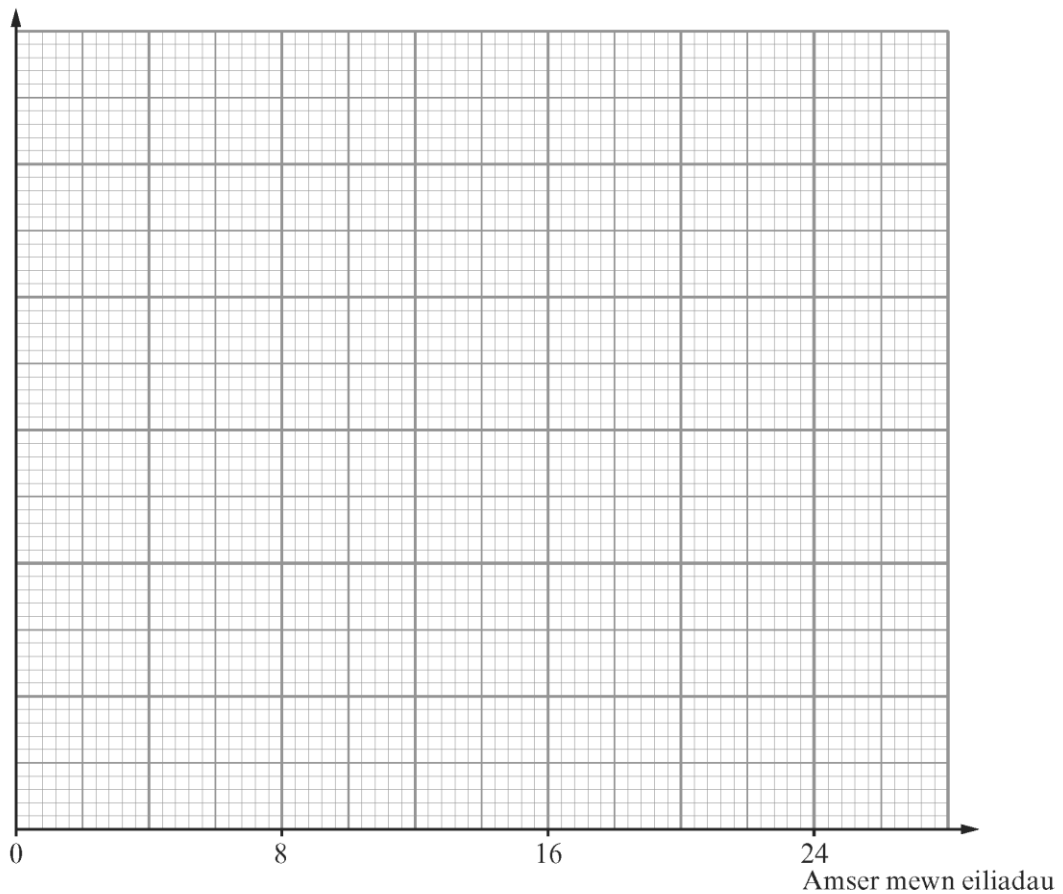
Amser mewn eiliadau, t	$0 < t \leq 4$	$4 < t \leq 8$	$8 < t \leq 12$	$12 < t \leq 16$	$16 < t \leq 24$
Nifer y gweithwyr	0	2	36	24	8

Cwblhewch y raddfa ar echelin y dwysedd amllder a lluniadwch histogram i ddarlunio'r dosraniad ar y papur graff isod.

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Dwysedd amllder



[3]

- (c) Pa un o'r ddau grŵp o weithwyr, ar gyfartaledd, yw'r cyflymaf yn sganio 20 eitem yn yr uwchfarchnad? Rhaid i chi roi rheswm dros eich ateb.

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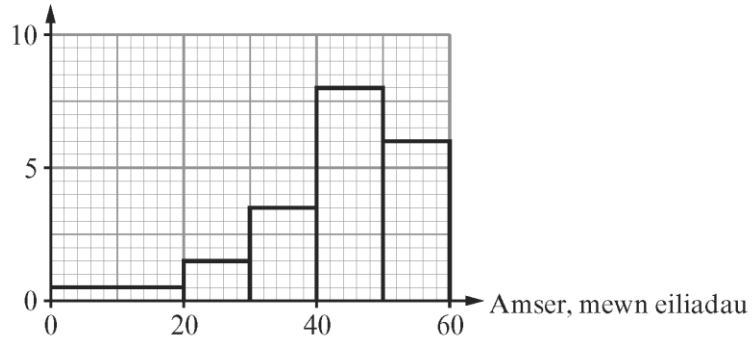
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[1]

9.

- (a) Mesurodd rhywun yr amser y gwnaeth pob plentyn mewn grŵp o 200 o blant ei gymryd i wŷo botwm ar grys. Mae'r histogram isod yn darlunio'r canlyniadau a gafodd eu gweld.

Dwysedd amlder



Defnyddiwch yr histogram i gyfrifo faint o blant gymerodd lai na 50 eiliad i wŷo botwm ar grys.

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[3]

- (b) Mesurodd rhywun yr amser y gwnaeth pob oedolyn mewn grŵp o 200 o oedolion ei gymryd i wñio botwm ar gryd. Cafodd y dosraniad amlder grŵp canlynol ei lunio.

Amser, t eiliad	$0 < t \leq 20$	$20 < t \leq 30$	$30 < t \leq 40$	$40 < t \leq 50$	$50 < t \leq 60$
Nifer yr oedolion	20	20	25	35	100

- (i) Darganfyddwch amcangyfrif o ganolrif y dosraniad hwn.

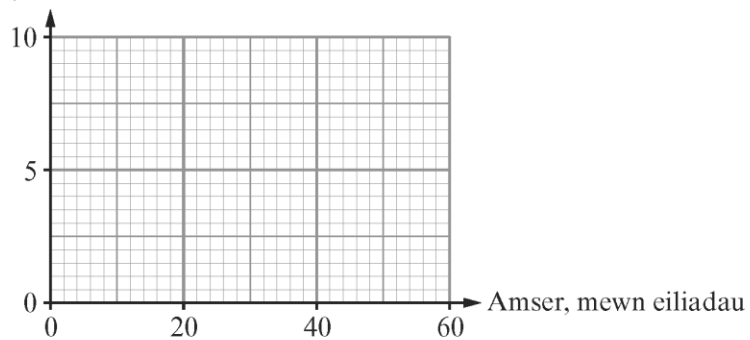
..... [1]

- (ii) Lluniadwch yr histogram i ddarlunio'r dosraniad ar y papur graff isod.

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 [3]

Dwysedd amlder



- (c) Gan ddefnyddio'r wybodaeth o rannau (a) a (b), yn eich barn chi a yw'r oedolion yn gyflymach na'r plant yn gwnio botymau ar grysau? Rhaid i chi roi rheswm dros eich ateb.

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 [1]

10.

Gwnaeth rhywun fesur yr amser gymerodd pob person mewn grŵp o 200 o blant 10 oed i ateb holiadur byr.

Cawson nhw'r dosraniad amlder grŵp canlynol.

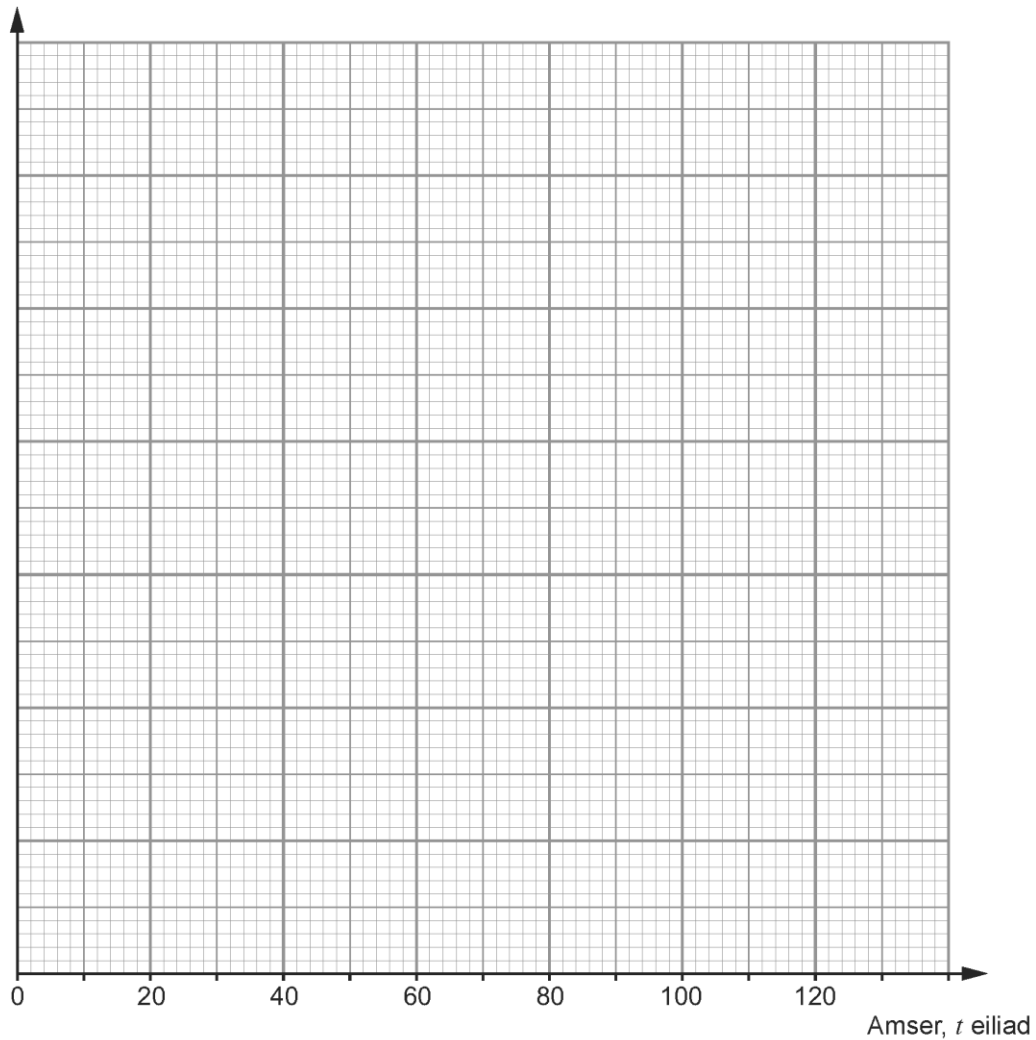
Amser, t eiliad	$0 < t \leq 20$	$20 < t \leq 40$	$40 < t \leq 60$	$60 < t \leq 80$	$80 < t \leq 120$
Nifer y plant 10 oed	36	44	100	12	8

(a) Lluniadwch histogram i ddarlunio'r dosraniad ar y papur graff isod. [4]

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- (b) Cafodd tasg unfath (*identical*) ei rhoi i 200 o bobl 20 oed. Roedd yr amserau oedd wedi'u cymryd i ateb yr holiadur byr wedi cael eu cofnodi hefyd, gan ddefnyddio'r un cyfyngau amser (*time intervals*) ag a gafodd eu defnyddio ar gyfer y plant 10 oed. 58 eiliad oedd yr amser canolrifol gymerodd y bobl 20 oed i ateb yr holiadur byr.

Mae Gemma'n dweud,

'Mae'r canolrif ar gyfer y plant 10 oed yr un fath â'r canolrif ar gyfer y bobl 20 oed.'

Mae Fred yn anghytuno. Mae e'n dweud,

'Gallai'r canolrif ar gyfer y plant 10 oed fod yn llai na'r canolrif ar gyfer y bobl 20 oed.'

Eglurwch pam gallai naill ai Gemma neu Fred fod yn gywir. [2]

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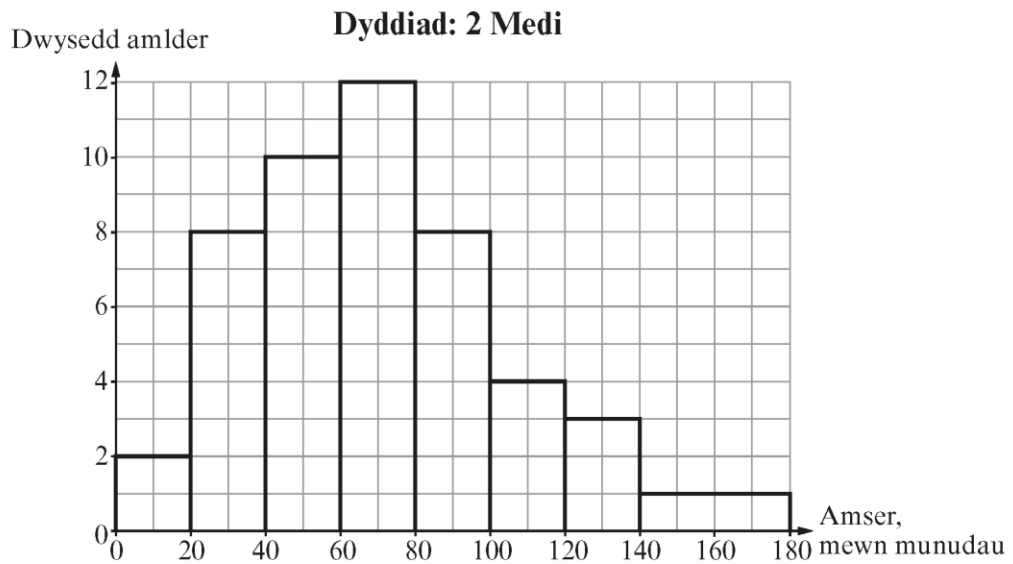
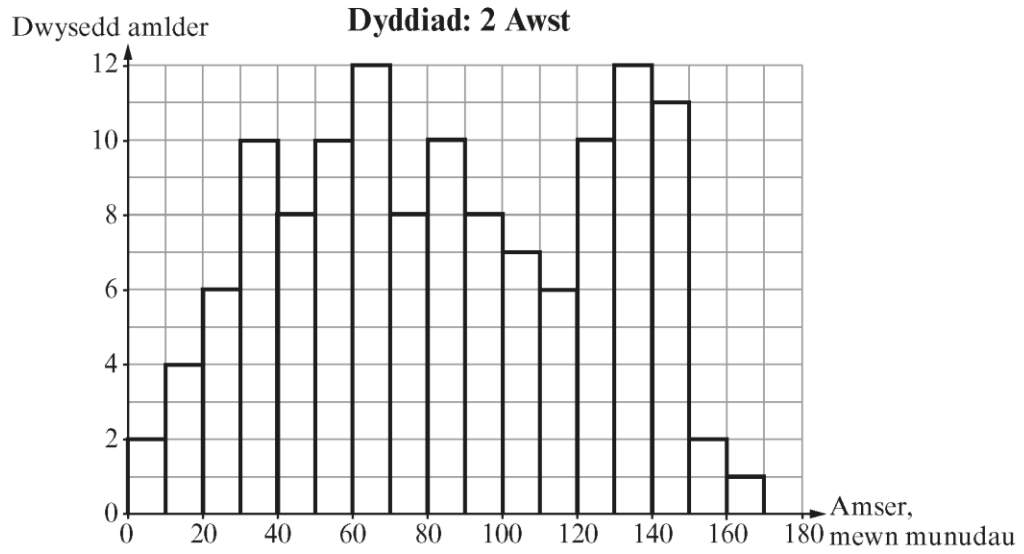
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11.

Mae'r histogramau isod yn dangos cyfanswm yr amserau y gwnaeth gweithwyr swyddfa mewn cwmni eu treulio ar y ffôn ar 2 Awst ac ar 2 Medi.



- (a) Cyfrifwch nifer y gweithwyr swyddfa dreuliodd gyfanswm amser o 60 munud neu lai ar y ffôn ar 2 Awst. [3]

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- (b) Eglurwch pam nad yw'n bosibl defnyddio'r histogram i gyfrifo faint o alwadau ffôn gafodd eu gwneud ar 2 Awst.

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[1]

- (c) Awgrymodd Grant nad yw'n bosibl cyfrifo faint yn union o weithwyr swyddfa dreuliodd fwy na 130 o funudau ar y ffôn ar 2 Medi.
Ydy Grant yn gywir? Rhaid i chi roi rheswm dros eich ateb.

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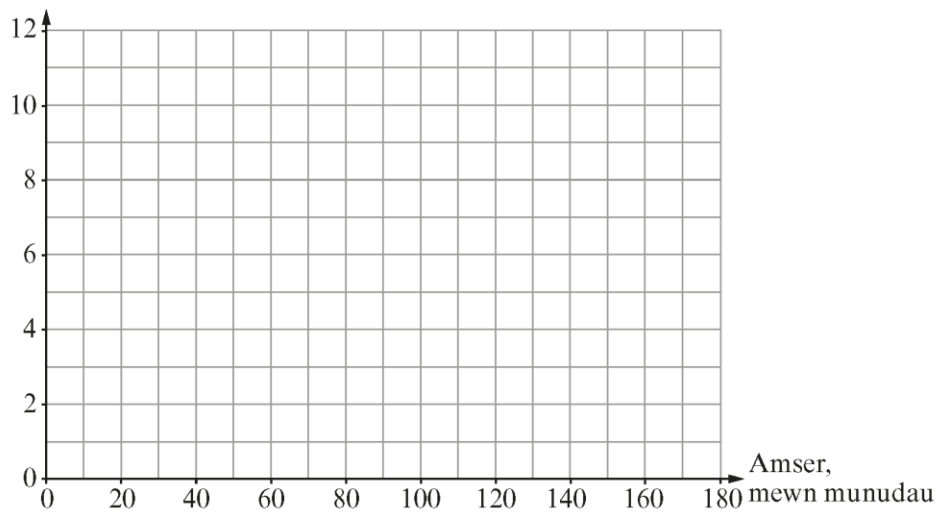
[1]

- (ch) Defnyddiwch y papur graff isod i ail-luniadu'r histogram ar gyfer 2 Awst, gan ddefnyddio grwpiau o'r un lled â'r rhai sydd yn yr histogram ar gyfer 2 Medi.

[3]

Dyddiad: 2 Awst

Dwysedd amlder



Cynllun Marcio

1.

Unitised Unit 3 – June 2015 Higher Tier	✓		Comments
18. To be viewed with graph. Idea that each large block is equivalent to frequency of 20 OR each block on the y-axis is a frequency density of 4 OR 4/12 of 240 80 (trees)		M2 A1	M1 for $12 \times (x \times 5) = 240$

2.

(a)(i) Idea: $5 \times \dots = 6$ or sight of $6/5$ or $6 \div 5$ Height of 15 to 20 group indicated as 1.2 Correct uniform scale shown	S1 B1 B1	3 correct values, no incorrect values is sufficient
(ii) Method based on area 15	M1 A1	Must include at least 3 correct products. FT from their histogram with a uniform scale provided the maximum value on FD axis < 2 ($7.5 \times 0.4 + 5 \times 1 + 5 \times 1.2 + 10 \times 0.1 = 3 + 5 + 6 + 1$) CAO
(b) Correct histogram on the graph paper provided	B3	(Frequency densities: 0, 0.5, 6, 2, 0.5) B2 for suitable uniform scale to at least 6, having worked with frequency density with at least 3 bars of the histogram correct B1 for working with frequency density, at least 3 calculations correct, OR sight of a uniform scale to 6 (not a scale to 24)
(c) ‘Staff’ with a reason based on the shape of the histogram or the skew of the data	E1	CAO Accept ‘staff’ stated or implied with a reason, e.g. ‘staff as the median (or mode) is in the group 8 to 12 seconds which is quicker than customers (at the self-checkout)’
	9	

3.

Linear GCSE Mathematics Higher Tier November 2015 Paper 2		FINAL MARK SCHEME Comments
12.(a) Strategy, finding area $0.25 \times 20 + 1 \times 10 + 1.8 \times 5 + 2 \times 5 + 0.5 \times 10$ 39 (people)	M1 M1 A1	Any single area is sufficient Allow 1 error in 1 of the products (Note for markers: $5+10+9+10+5$) CAO
(b) $2 \times 3 + 0.5 \times 10$ 11 (people)	M1 A1	
(c) Explanation of the first bar now being only between 10 and 20 with double the height or with height 0.5.	E1	FT if possible from (a) Do not accept mention only that there is now no bar between 0 and 10. However, accept mention only of just double height bar between 10 and 20 Do not accept ‘the frequency density is increased’ without saying to what or how.
	6	

4.

<p>15. Strategy, e.g. noticing 0 to 40 is 1.5 times 40 to 50, or first rectangle $\frac{3}{5}$ with second $\frac{2}{5}$ of a quantity</p> <p>$40 \times 3x + 10 \times 8x = 40$ or equivalent, or 24 written adjacent to 16,</p> <p>Uniform scale 0.2, 0.4, 0.6, ..., implied or shown (height of first rectangle is 0.6, 2nd height is 1.6, etc.)</p> <p>$20 \times 24 + 45 \times 16 + 55 \times 18 + 65 \times 22 + 75 \times 24 + 85 \times 18 + 95 \times 2$ (or with the first term split $12 \times 10 + 12 \times 30$) OR $0.6 \times 20 \times 40 + 1.6 \times 45 \times 10 + 1.8 \times 55 \times 10 + 2.2 \times 65 \times 10 + 2.4 \times 75 \times 10 + 1.8 \times 85 \times 10 + 0.2 \times 95 \times 10$</p> <p>(£)7140</p>	S1	or £25 with 20 people, or 40 squares for £50 may be seen on the histogram, or 30 written adjacent to 20
	B1	Award of this B1 implies the award of the S1 also
	B1	or sight of 0.2, or 'each person is 1 square', or sight of any 6 of 24, 16, 18, 22, 24, 18, 2 Award of this B1 implies the award of the S1 and previous B1 also <i>If M1 or M2 awarded, this implies previous S1, B1 and B1</i>
	M2	M1 for <ul style="list-style-type: none"> any 3 correct products within the overall sum, or the appropriate sum of products but with bounds used instead of mid points, or use of mid points 55, 65, 75, 85 and 95 within a product sum
	A1 6	CAO

5.

4(d)(i) Correct histogram	B3	Accept missing labels for B2 or B1 B2 for sight of 0.06, 0.36, 0.24, 0.02 and 0.02 or histogram with at least 3 bars correct, OR B1 for histogram with any 1 bar correct, or for a suitable frequency density scale, uniform to a least 0.36
(ii) Median $(76 + 1)/2$ or $76/2$ Attempt to identify $\frac{1}{9}$ or $\frac{8}{9}$ of the second bar Correct identification of the median	B1 B1 B1	FT from their histogram if possible Could also be $32.5/36$ or $3.5/36$ <i>Allow, in the answer space or indicated on the histogram the calculated value of 188.888... OR 190.2777 (people) truncated or rounded.</i>
(e)(i) $200 \times 0.1 + 100 \times 0.4 + 100 \times 0.6 + 400 \times 0.15$ 180 (people)	M2 A1	M1 for any 3 correct area calculations ($20+40+60+60$) FT for a summation of their 4 values provided M1 awarded
(ii) $200 \times 0.1 + \frac{1}{2} \times 100 \times 0.4$ 40 (people)	M1 A1 11	FT their values from (i)

6.

(a) Strategy, finding area $0.5 \times 10 + 2 \times 10 + 4 \times 10 + 3 \times 10 + 1 \times 20$ or equivalent 115 (people)	M1 M1 A1	Any single area is sufficient Must show intention to add. Allow for 4 of the 5 terms correct (Note for markers: $5+20+40+30+20$ or the final 20 as $10+10$) CAO
(b) $0.5 \times 10 + \frac{1}{4} \times 2 \times 10$ or equivalent 10 (people)	M1 A1	FT 'their 5' + $\frac{1}{4}$ of 'their 20' provided area is being considered, with M1 awarded in (a)
(c) (80% of 115 people is) 92 (people) 95 (people in up to 40 seconds) (Exceeded by serving) 3 (extra people)	B1 B1 B1	FT 'their 115' provided area has been considered, with M1 awarded in (a) FT 'their 115' - 'their 20', with M1 awarded in (a) CAO Allow B3 for an unsupported answer of 3 <i>Alternative:</i> <i>95 (people in up to 40 seconds) B1</i> <i>$(100 \times) 95 \div 115 (0.826... \text{ or } 82.6\%) \text{ AND}$</i> <i>(Difference) 2.6...% of 115 B1</i> <i>(exceeded by serving) 3 (extra people) B1</i> <i>With equivalent FT, provided M1 awarded in (a), 'their 115' and 'their 115 - their 20',</i>

7.

2015 Summer Linear Paper 1 Higher Tier		Comments
16(a) Method of finding an area 2 correct areas AND intention to add all areas 250	M1 M1 A1	Areas are 10+60+100+40+20+20 CAO
16(b) $(100 \times) 30/250$ 12(%)	M1 A1	FT their $(\frac{1}{2} \times 20 + 20) /$ 'their 250', including from non area consideration in (a) 3/25 <i>If no marks, award SC1 for an answer of 88(%)</i>
16(c) Identifying the 125, 125 split or 125.5 55 or 55.5 (or 44.5 or 45) as a proportion of the 100 or equivalent 25.5 (minutes) or 25.6 (minutes)	M1 m1 A1	Accept sight of $(250 \div 2 =) 125$ FT must be from <u>at least M2 awarded in (a)</u> <u>No FT</u> from an answer of 25 in (a) May be indicated on the histogram. Sight of $20 + 10 \times 55/100$, or $30 - 10 \times 45/100$ is awarded M1, m1 Accept a vertical line at 25.5 indicated on the histogram CAO. Must be stated. Do not accept 25.55 (minutes)

8.

11(a)(i) Idea: $6 \times \dots = 12$ Height of 16 to 22 group indicated as 2 Correct uniform scale shown (ii) Method of summing width \times height 59	S1 B1 B1 M1 A1	3 correct values, no incorrect values is sufficient Must include at least 3 correct products. FT from their histogram with a uniform scale $(6 \times 0.5 + 4 \times 5 + 4 \times 6 + 6 \times 2)$ CAO
(iii) Finding middle worker, i.e. 30 th value (or 29 $\frac{1}{2}$ th) Realising within 12 to 16 interval 7 (or 6.5) out of the 24 in the group 13(.17seconds) or 13(.08 seconds)	S1 M1 M1 A1	FT from their histogram with a uniform scale Must FT from histogram or either no working or correct working Do not accept an answer of 13 without working
(b) Correct histogram on the graph paper provided	B3	B2 for suitable uniform scale to at least 9, having worked with frequency density with at least 3 bars of the histogram correct B1 for working with frequency density, at least 3 calculations correct, OR sight of a uniform scale to 9 (not a scale to 36)
(c) '40 and over' with a reason based on the shape of the histogram or the skew of the data	E1 13	Accept 'over 40s' with a suitable reason Accept 'over 40s, other median is 13 seconds where as median for these lies in 8 to 12 second group'

9.

(a) 140 o blant

(b) (i) 50 eiliad

(ii) Dwyseddau amllder 1, 2, 2.5, 3.5, 10. Plotio'r histogram yn gywir.

(c) Y plant sy'n gyflymach gan fod rhaid i'w canolrif nhw fod yn llai na 50 eiliad (sef canolrif yr oedolion).

10.

18(a) Axis labelled frequency density with a uniform scale from 0 to 5 (minimum) Frequency densities 1.8, 2.2, 5, 0.6, 0.2 Correct histogram	B1 M2 A1	Do not accept a scale using less than half the paper or for scales to ≥ 100 FT for their uniform scale M1 for any 3 correct frequency densities
18(b) Explanation: <ul style="list-style-type: none"> • Median is in the group $40 < t \leq 60$ • Estimate so we don't know, or • (Estimate of the) median is 44, or • It (may be) is nearer 40 than 60 	E1 E1	Each E mark is independent. Accept 'median is in same group' Accept 'median could be towards the lower end of the median group'.

11.

12.(a)(i) Idea of frequency density $\times 10$ $(2+4+6+10+8+10) \times 10$ 400 (people)	S1 M1 A1	Allow 1 error CAO. Must be from correct working for 2 nd August SC1 for an answer of 400 from reading 2 nd September
12.(b) Reason, e.g. 'only know total time', 'only shows the amount of time'	E1	
12.(c) Implies 'Grant correct' AND reason, e.g. 'can only estimate from the group', 'yes as the histogram only gives 120 to 140 minutes'	E1	
12.(d) Frequency densities: 3, 8, 9, 10, 9, 6.5, 11, 3.5 Correct histogram	M2 A1	Watch last 3.5 height is of width 140 - 180 M1 for any 4 correct frequency densities CAO