

Diagramau Blwch a Blewyn

1.

Mae angen i Iona roi cyflwyniad i'w tîm gwaith.

Mae ei phennaeth wedi gofyn iddi gynnwys plot blwch-a-blewyn (*box and whisker plot*) yn ei chyflwyniad.

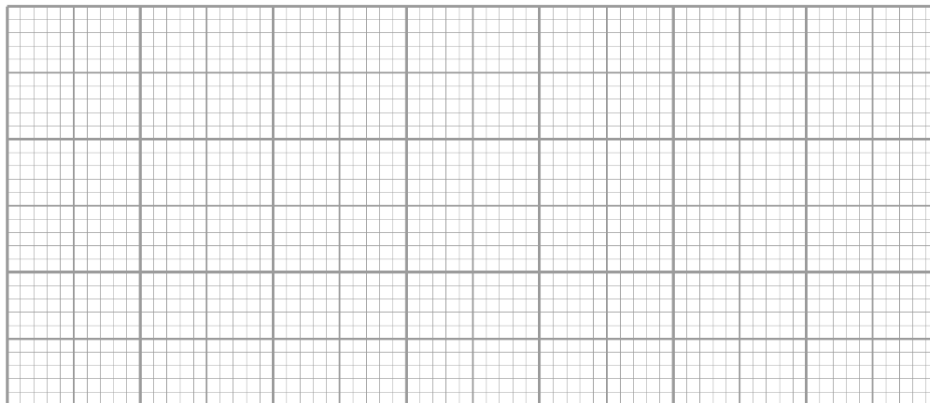
Mae Iona'n gweithio mewn tîm gwerthu, yn gwerthu systemau ffôn newydd i gwmnïau mawr. Roedd hi wedi cael rhywfaint o ddata gwerthiant gan ei phennaeth, fel sy'n cael ei ddangos isod.

System fwyaf rhad sydd wedi'i gwerthu	£30
System fwyaf drud sydd wedi'i gwerthu	£140
Pris canolrifol y systemau sydd wedi'u gwerthu	£60
Pris chwartzel isaf system	£50
Pris chwartzel uchaf system	£100

Ar y papur graff isod, lluniadwch (*draw*) blot blwch-a-blewyn gan ddefnyddio'r data mae Iona wedi eu cael.

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[4]

2.

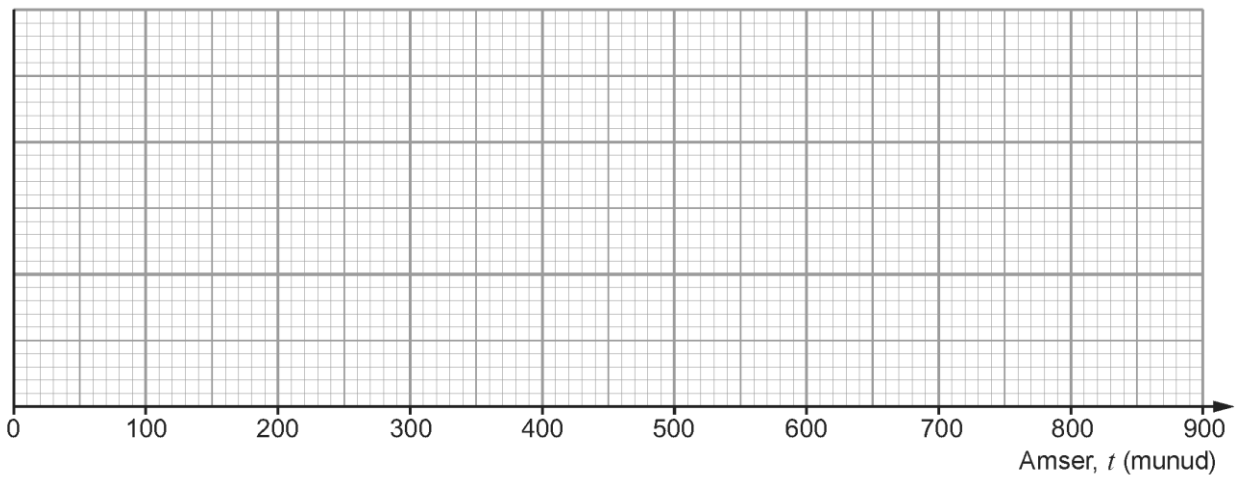
- (b) (i) Mae *Electronic5G* hefyd wedi ymchwilio i faint o amser roedd y grŵp hwn o 72 o bobl wedi ei dreulio yn defnyddio cyfryngau cymdeithasol ddydd Gwener diwethaf. Maen nhw wedi cyhoeddi'r datganiad canlynol.

Ddydd Gwener diwethaf, atebodd 72 o bobl ein harolwg ar faint o funudau roedden nhw wedi eu treulio yn defnyddio cyfryngau cymdeithasol. Rydyn ni'n gwybod y canlynol erbyn hyn:

- Yr amser canolrifol oedd 300 munud.
- Y chwarter isaf oedd 100 munud.
- Y chwarter uchaf oedd 550 munud.
- Yr amser byrraf oedd 1 awr yn union.
- Yr amser hiraf oedd 14 awr yn union.

Lluniadwch ddiagram blwch a blewyn i ddarlunio'r wybodaeth hon. [4]

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3.

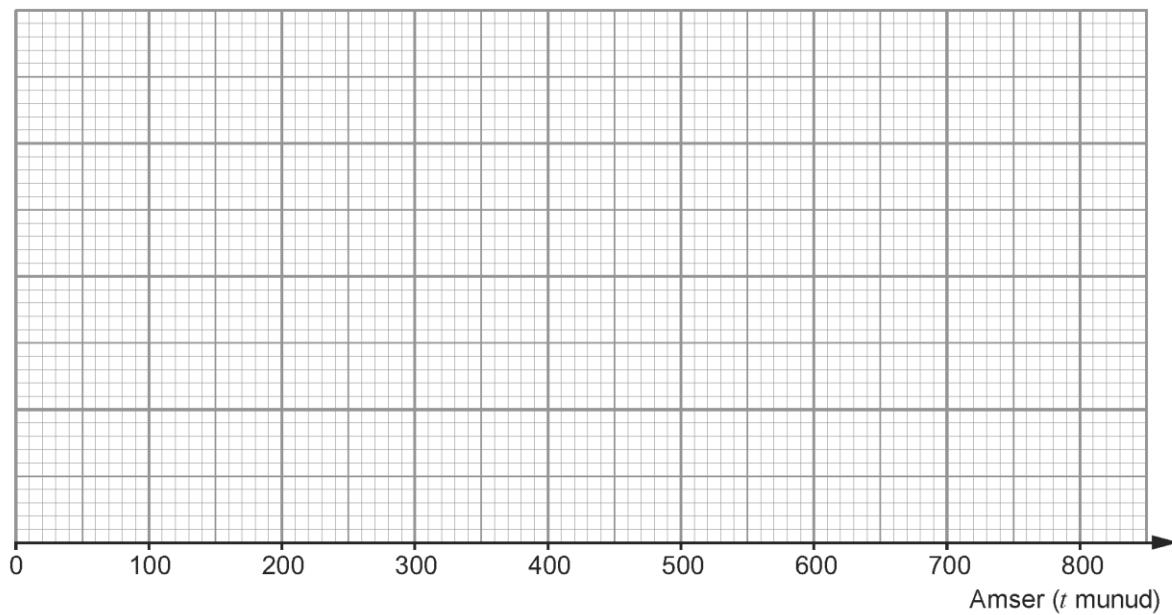
- (b) (i) Hefyd ymchwiliodd *Stateside3* i faint o amser dreuliodd y grŵp hwn o 80 o bobl yn gwyllo'r teledu ddydd Iau diwethaf. Cyhoeddod nhw y datganiad canlynol.

Ddydd Iau diwethaf, atebodd 80 o bobl ein harolwg am faint o funudau dreulion nhw yn gwyllo'r teledu.

Rydyn ni'n gwybod bellach:

- Yr amser canolrifol oedd 310 munud.
- Y chwarter isaf oedd 200 munud.
- Y chwarter uchaf oedd 560 munud.
- Roedd y person wylodd y teledu leiaf wedi treulio 50 munud.
- Roedd y person wylodd y teledu fwyaf wedi treulio 800 munud.

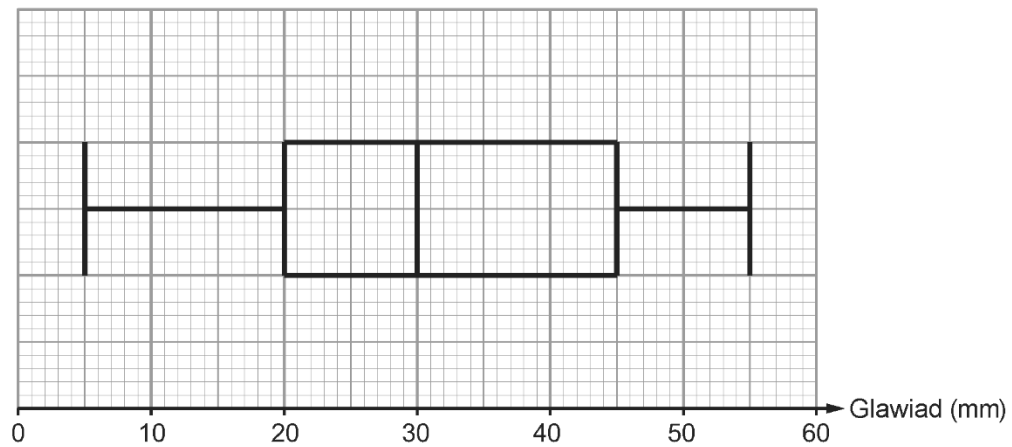
Lluniadwch ddiagram blwch a blewyn (*box and whisker*) i ddarlunio'r wybodaeth hon. [4]



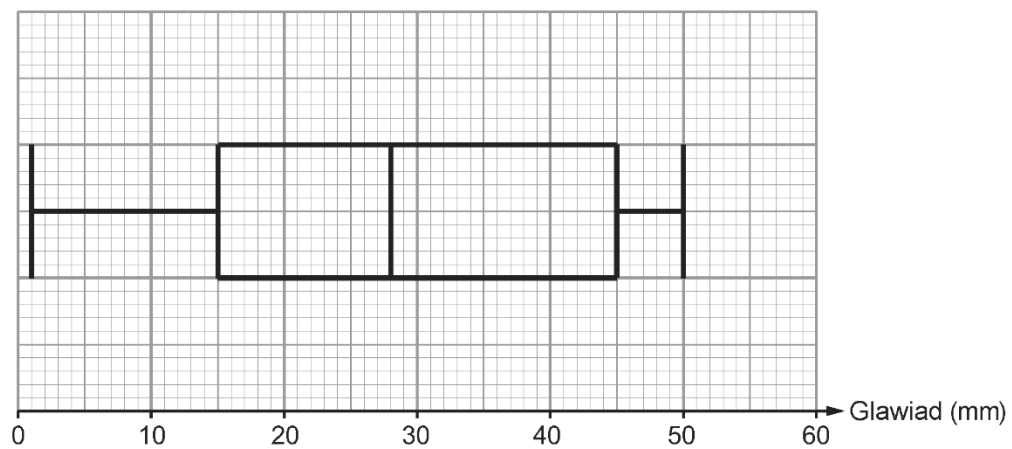
4.

Mae'r plotiau blwch-a-blewyn canlynol yn darlunio'r glawiad dyddiol ym mis Ebrill 2016 ar gyfer Trefwen a Nawrby.

Glawiad mis Ebrill Trefwen



Glawiad mis Ebrill Nawrby



(a) Cwblhewch y tabl canlynol.

[4]

	Amrediad	Canolrif	Amrediad rhyngchwartel
Trefwen mm mm mm
Nawrby mm mm mm

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(b) Mae Iona yn mynd ar ei gwyliau fis Ebrill nesaf.
 Mae hi'n gobeithio cael tywydd da, gyda bron dim glaw.
 Mae hi'n penderfynu mynd i Nawrby.
 Rhowch reswm dros gefnogi penderfyniad Iona.
 Dylech chi gynnwys gwerthoedd ar gyfer Trefwen a Nawrby.

[1]

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5.



Mae'r tabl yn rhoi'r dosraniad amllder grŵp ar gyfer hydoedd cordiau trydanol 80 tostiwr.

Hyd, i'r cm agosaf	49-53	54-58	59-63	64-68
Nifer y tostiwr	6	38	32	4

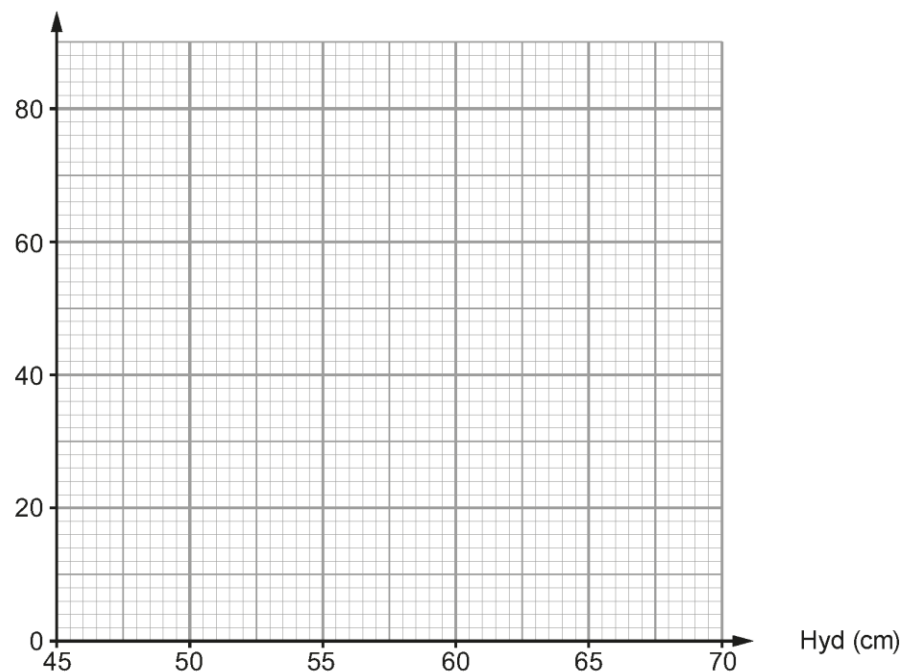
(a) Cwblhewch y tabl amllder cronus canlynol.

[1]

Hyd (cm)	<48.5	<53.5	<58.5	<63.5	<68.5
Amllder cronus	0	6			

(b) Ar y papur graff isod, lluniadwch ddiagram amllder cronus i ddangos y wybodaeth hon. [2]

Amllder cronus



- (c) Defnyddiwch eich diagram amllder cronnus i ddarganfod amcangyfrif ar gyfer canolrif, chwartel isaf, chwartel uchaf ac amrediad rhyngchwartel hydoedd y cordiau trydanol mewn centimetrau. [4]

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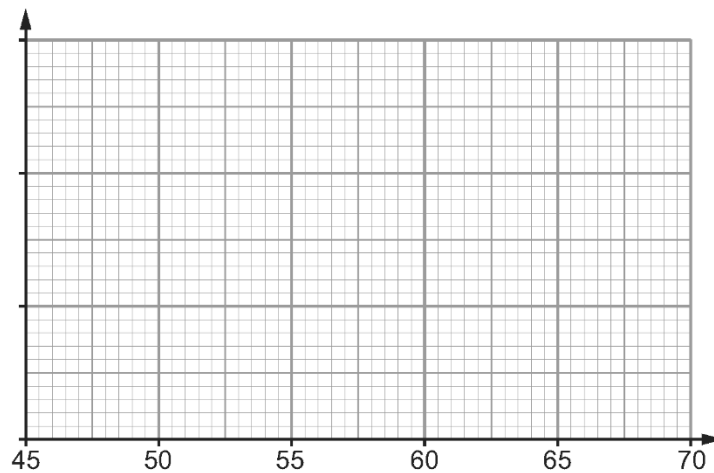
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Canolrif	
Chwartel isaf	
Chwartel uchaf	
Amrediad rhyngchwartel	

- (ch) Hyd y cord trydanol byrraf yw 50 cm.
 Hyd y cord trydanol hiraf yw 68 cm.
 Lluniadwch ddiagram blwch-a-blewyn (*box and whisker*) i ddarlunio hydoedd y cordiau trydanol. [3]



6.

Mae cwmni'n ystyried newidiadau i'w restr brisiau ar gyfer dosbarthu parceli mewn ardal leol. Mae'r cwmni'n ystyried tâl sy'n seiliedig ar y pellter rhwng y warws a chyrchfan (*destination*) y parcel.

Mae'r tabl yn rhoi'r dosraniad amlder grŵp ar gyfer y pellterau, wedi'u mesur i'r km agosaf, ar gyfer 60 parcel.

Pellter, i'r km agosaf	1 - 10	11 - 20	21 - 30	31 - 40
Nifer y parceli	10	30	15	5

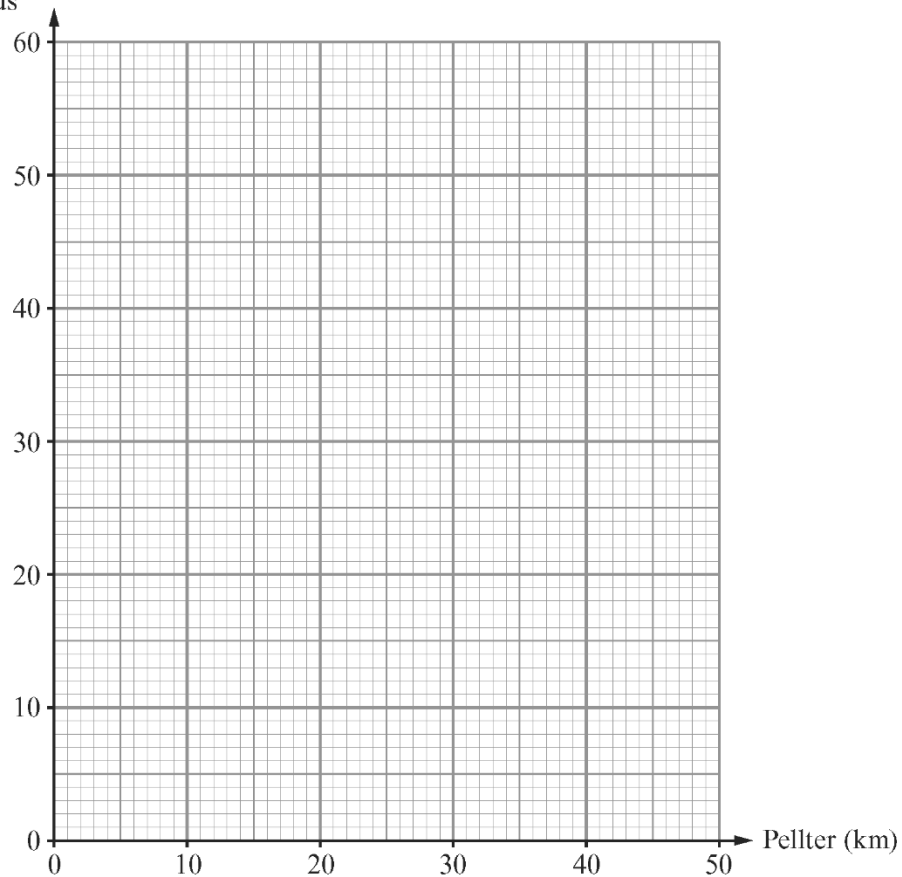
(a) Cwblhewch y tabl amlder cronus canlynol.

Pellter (km)	<0.5	<10.5	<20.5	<30.5	<40.5
Amlder cronus	0	10			

[1]

(b) Ar y papur graff isod, lluniadwch (*draw*) ddiagram amlder cronus i ddangos y wybodaeth hon.

Amlder cronus



[2]

- (c) Defnyddiwch eich diagram amllder cronus i ddarganfod amcangyfrif ar gyfer canolrif ac amrediad rhyngchwartel y pellterau dosbarthu.
Rhaid i chi ddangos eich gwaith cyfrifo.

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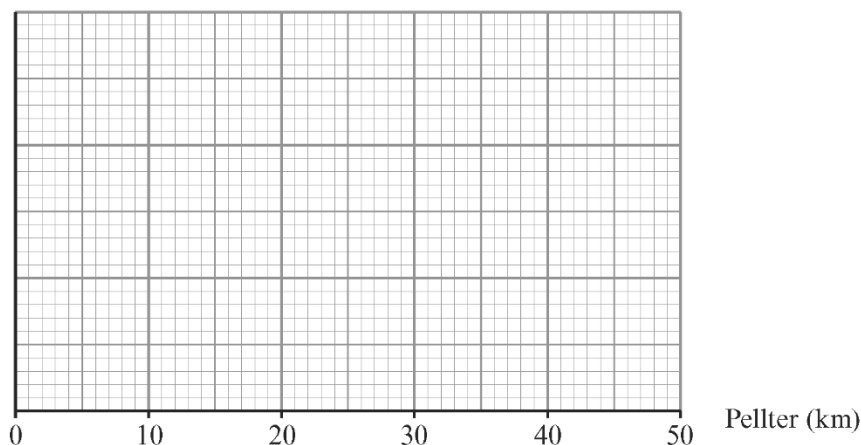
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Canolrif Amrediad rhyngchwartel [3]

- (ch) Ar gyfer y 60 parcel hyn, y pellter dosbarthu byrraf yw 2 km a'r pellter dosbarthu hiraf yw 37 km.
 Lluniadwch ddiagram blwch a blewyn i ddarlunio'r wybodaeth hon.



[4]

- (d) O'r blaen, y tâl dosbarthu oedd £2 am bob parcel.
 Y cynllun prasio newydd sy'n cael ei ystyried yw:
- dosbarthu am ddim am bob parcel hyd at y pellter dosbarthu canolrifol;
 - £4 y parcel am bob dosbarthiad arall.

A fydddech chi'n disgwyl i'r cwmni elwa (*profit*) o'r prasio newydd am ddosbarthu parceli?
 Eglurwch eich ateb.

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[3]

7.

Mae Freya yn mynd i'r gampfa 60 gwaith.
 Mae hi'n cofnodi faint o amser mae hi'n ei dreulio ar y peiriant rhedeg ar bob un o'r 60 gwaith hyn.



Mae Freya wedi grwpio ei data mewn cyfngau 5 munud.
 Y cyfwng cyntaf yw $0 < \text{amser} \leq 5$ munud.
 Y cyfwng olaf yw $35 < \text{amser} \leq 40$ munud.
 Lluniadodd Freya ddiagram amlder cronus.

O'r canlyniadau mae hi'n rhoi'r wybodaeth ganlynol i chi:

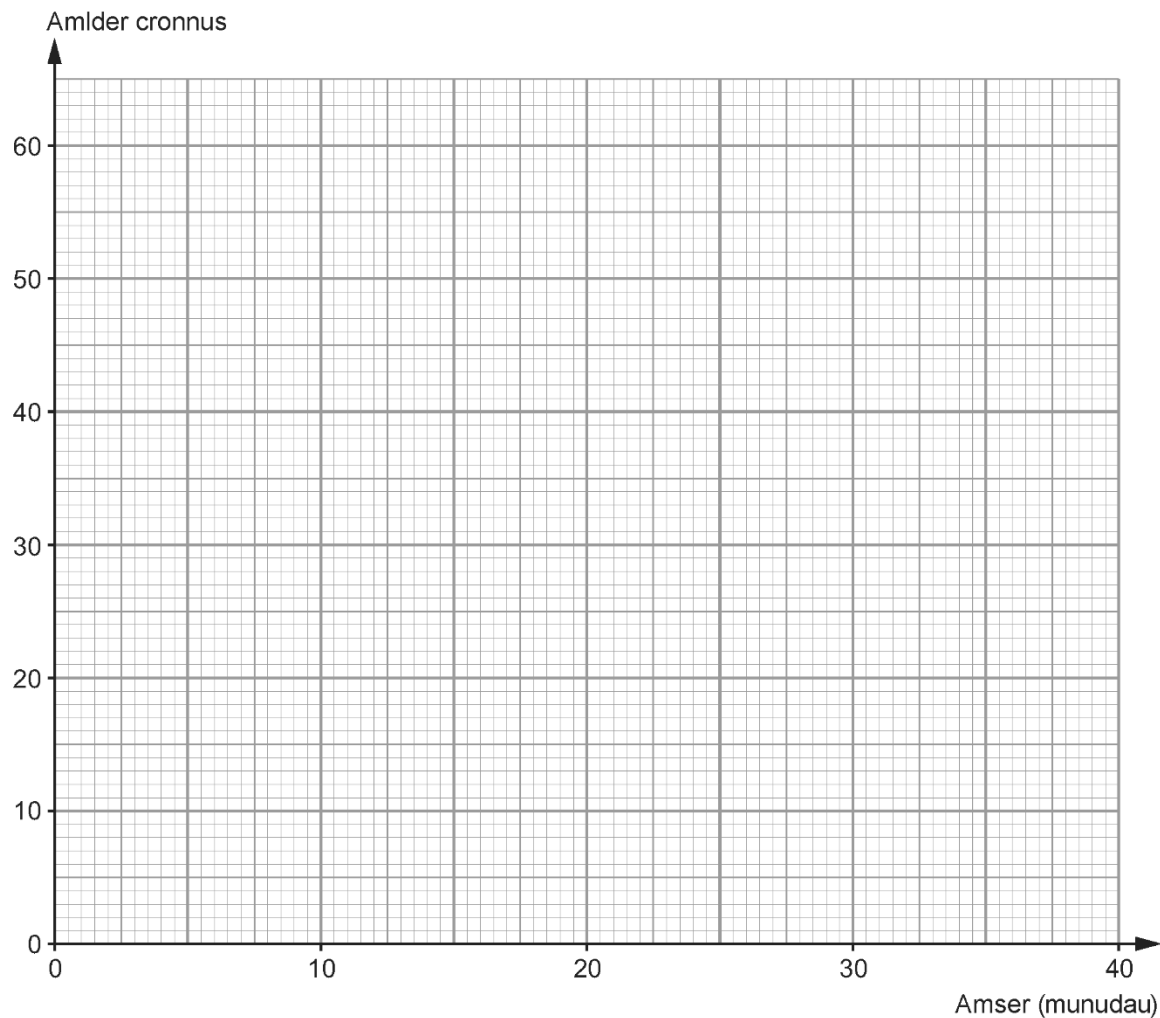
- Yr amser byrraf dreuliodd hi ar y peiriant rhedeg oedd 5 munud a dim ond unwaith digwyddodd hyn.
- Amrediad ei hamserau yw 35 munud.
- Ei hamser canolrifol yw 18 munud.
- Ei chwarterel isaf yw 10 munud.
- Ei hamrediad rhyngchwarterel yw 14 munud.
- Dim ond 5 gwaith treuliodd Freya fwy na 30 munud ar y peiriant rhedeg.

(a) Defnyddiwch y wybodaeth hon i gwblhau diagram amlder cronus posibl ar yr echelinau sydd wedi'u rhoi isod. [7]

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- (b) Dydy'r diagram amlder cronnus rydych chi wedi ei luniadu ddim yn union yr un peth â'r un roedd Freya wedi ei luniadu. Esboniwch pam mae eich diagram amlder cronnus chi yn wahanol i ddiagram amlder cronnus Freya. [1]

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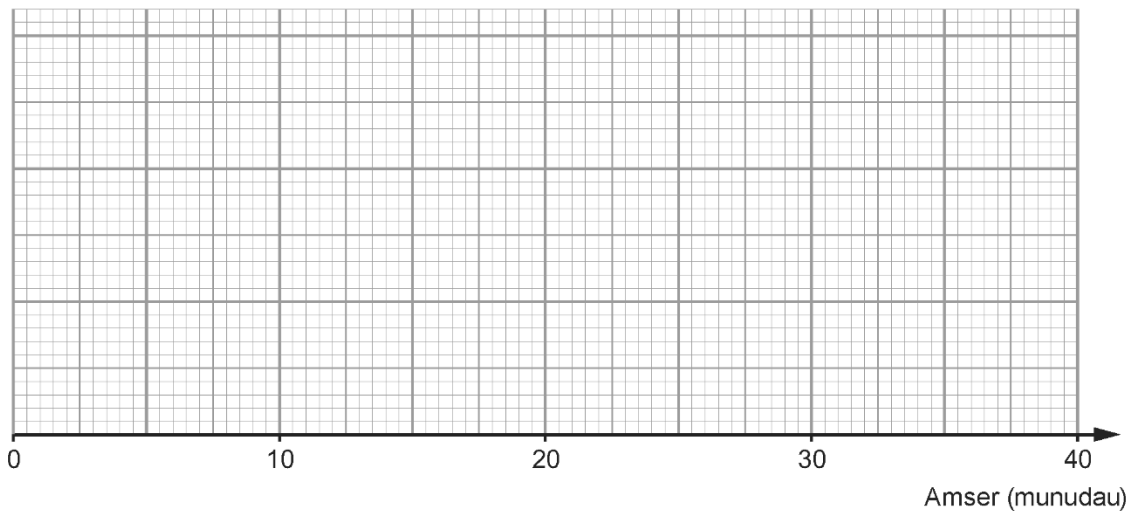
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- (c) Defnyddiwch y wybodaeth sydd wedi'i rhoi a'ch diagram amlder cronnus i luniadu diagram blwch-a-blewyn ar y papur graff isod. [3]

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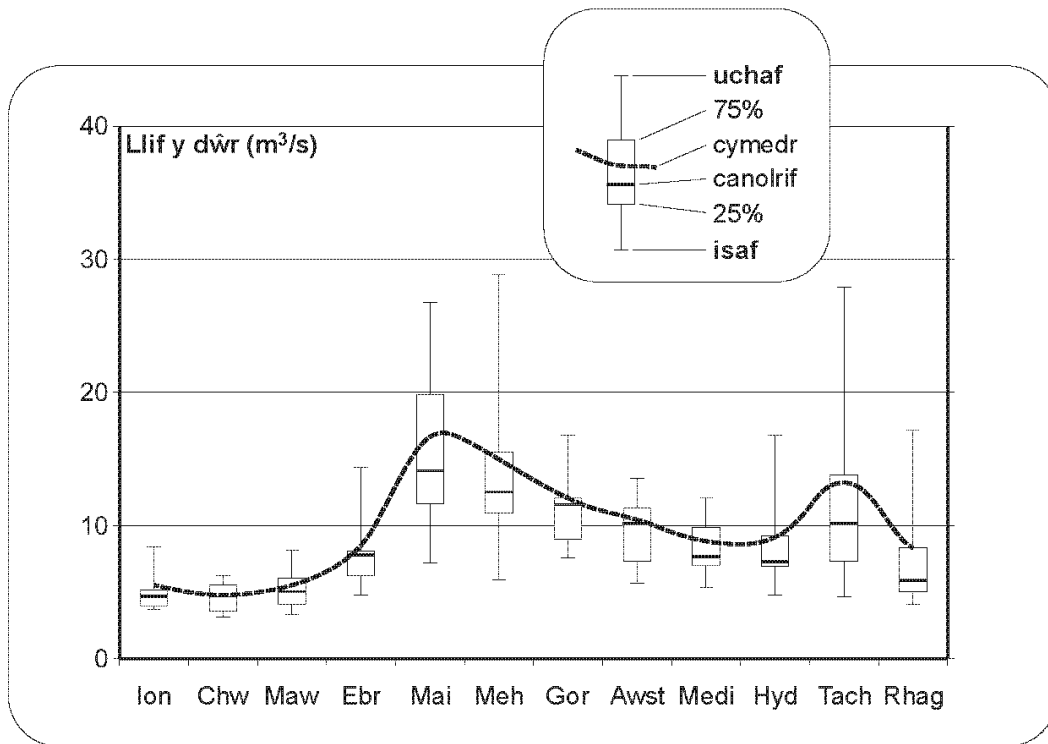
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8.

Cafodd y bwrdd gwybodaeth isod ei weld ger afon ym mynyddoedd yr Eidal.



Mae'r bwrdd gwybodaeth yn rhoi data misol am gyfaint y dŵr sy'n llifo heibio i drawstoriad o'r afon bob eiliad.

- (a) Ysgrifennwch y mis sydd â'r llif cymedrig mwyaf o ddŵr. Amcangyfrifwch y llif cymedrig mwyaf hwn o ddŵr, gan roi unedau eich ateb. [3]

Mis

Llif cymedrig mwyaf

- (b) Pa fis oedd â'r amrediad lleiaf o lif dŵr?
Amcangyfrifwch yr amrediad hwn.
Rhaid i chi ddangos eich holl waith cyfrifo. [2]

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Mis

Amrediad

- (c) Pa fis oedd â'r amrediad rhyngchwartel mwyaf o lif dŵr?
Amcangyfrifwch yr amrediad rhyngchwartel hwn.
Rhaid i chi ddangos eich holl waith cyfrifo. [3]

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Mis

Amrediad rhyngchwartel

- (ch) Mae'r papur newydd lleol yn cyhoeddi llun o'r afon gyda chapsiwn.



Llif cymedrig yr afon am y flwyddyn oedd

- Cwblhewch y capsiwn hwn.
Rhaid i chi ddangos eich holl waith cyfrifo. [3]

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Cynllun Marcio

1.

6.A uniform scale used (shown) at least 30 to 140 with idea of box-and-whisker plot AND with label '£'	B1	Award B4 for a correct response
Range of whiskers correct	B1	
Lower and upper quartiles used as ends of the box	B1	
Median shown correctly within the box	B1	
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2.

(b)(i) Range ends 60 and 840 correctly indicated with 'whiskers' Within a box:	B1	There must be a box drawn for these three marks, not vertical lines only.
Median line correctly indicated at 300 (minutes)	B1	
LQ correctly indicated at 100 (minutes) UQ correctly indicated at 550 (minutes)	B1	
(ii) Suitable comparison statement for medians Suitable comparison statement for IQR Conclusion, e.g. 'Agree as the median time spent on the Friday is 80 minutes more than the median time spent on the Tuesday', 'The times spent on Tuesday are much less varied than the times spent on Friday (as shown by the interquartile ranges of 170 minutes on Tuesday and 450 minutes on Friday)'	M1 M1 A1	FT their (a)(v) median FT their (a)(v) IQR Depends on first M1 Accept 'Agree' OR 'Yes' 'because on average Friday is higher' Ignore extra comment based on the IQR providing it does not contradict their conclusion based on the median. <i>If no marks awarded SC1 for 'Cannot decide as we do not know if these are a typical Friday and a typical Tuesday'.</i>
(c)(i) 60.9, 60.0, 60.6, 59.1 ($\times 10000$)	B4	For the second accept 60 B3 for 60.857..., 60, 60.571..., 59.1428... ($\times 10000$) rounded or truncated, B2 for any two correct moving averages, rounded or truncated, B1 for a correct method seen, or 1 correct moving average (426/7, 420/7, 424/7, 414/7)
(ii) Reason that implies 'like with like' comparison, i.e. always includes the full set of days or because a 7 point moving average will provide an average for the week, e.g. 'Having a full week's data will iron out any daily fluctuations, e.g. higher weekend use of social media.'	E1	Do not accept 'because there are 7 days in a week' without further explanation <i>Accept statements such as "the results then show the viewing figures for a week"</i>
	12	

3.

<p>4(b)(i) Range ends 50 and 800 correctly indicated with 'whiskers' Within a box: Median line correctly indicated LQ correctly indicated UQ correctly indicated</p> <p>(ii) Suitable comparison statement for medians Suitable comparison statement for IQR Conclusion, e.g. 'Don't agree because....'</p> <p>(c)(i) Reason that implies 'like with like' comparison, i.e. always includes the full set of days or because a 7 point moving average will provide an average for the week</p> <p>(ii) 4.27, 4.30, 4.34, 4.40, 4.33 (million)</p>	<p>B1 B1 B1 B1 M1 M1 A1 E1 B4 12</p>	<p>There must be a box drawn for these three marks, not vertical lines only.</p> <p>FT their (a)(v) median IQR Thursday is 360, and FT their (a)(v) IQR Depends on first M1 Accept 'Don't agree' OR 'No' 'because on average Thursday is higher' Ignore extra comment based on the IQR providing it does not contradict their conclusion based on the median. If no marks awarded SC1 for 'Cannot decide as we do not know if these are a typical Thursday and a typical Wednesday'.</p> <p>Do not accept 'because there are 7 days in a week' or 'using the whole week's data' without further explanation <i>Accept statements such as "the results then show the viewing figures for a week"</i></p> <p>'0' representing hundredths must be shown as appropriate B3 for 4.27..., 4.3, 4.34..., 4.4, 4.32857... (million) rounded or truncated, B2 for any three correct moving averages, rounded or truncated, B1 for a correct method seen, or 1 correct moving average (29.9/7, 30.1/7, 30.4/7, 30.8/7, 30.3/7)</p>
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4.

<p>(a)</p> <table border="1"> <thead> <tr> <th></th> <th>Amrediad</th> <th>Canolrif</th> <th>Amrediad rhyngchwartel</th> </tr> </thead> <tbody> <tr> <td>Trefwen</td> <td>50 (mm)</td> <td>30 (mm)</td> <td>25 (mm)</td> </tr> <tr> <td>Nawrby</td> <td>49 (mm)</td> <td>28 (mm)</td> <td>30 (mm)</td> </tr> </tbody> </table>		Amrediad	Canolrif	Amrediad rhyngchwartel	Trefwen	50 (mm)	30 (mm)	25 (mm)	Nawrby	49 (mm)	28 (mm)	30 (mm)	<p>B4</p>	<p>B3 am unrhyw 5 cofnod cywir, NEU B2 am unrhyw 3 neu 4 cofnod cywir, NEU B1 am unrhyw 1 neu 2 gofnod cywir</p>
	Amrediad	Canolrif	Amrediad rhyngchwartel											
Trefwen	50 (mm)	30 (mm)	25 (mm)											
Nawrby	49 (mm)	28 (mm)	30 (mm)											
<p>(b) Rheswm, e.e. yn seiliedig ar gymharu'r canolrif (gyda'r glawiad canolrifol ar gyfer Nawrby (ychydig) yn is), NEU fawr ddim glaw gan fod y blewyn isaf ar 1mm o'i gymharu â Threfwen ar 5mm, NEU Rheswm yn seiliedig ar gymharu'r chwarter isaf</p>	<p>E1</p>	<p>Mae gwerthoedd yn ofynnol o fewn gosodiad rheswm, fodd bynnag derbyn os oes cyfeirio at werthoedd yn (a) heb fynegi'r rhain eto, e.e. 'mae'r canolrif ar gyfer Nawrby yn llai na'r canolrif ar gyfer Trefwen' Derbyn 'oherwydd ar gyfartaledd mae llai o mm o lawiad yn Nawrby na Threfwen' (gan mai'r canolrif yw'r unig gyfartaledd yn (a)) Dilyn trwodd os yw 'eu canolrif ar gyfer Nawrby' < 'eu canolrif ar gyfer Trefwen' ar yr amod bod un o'r canolrifau yn gywir Anwybyddu cyfartaleddau eraill a'r amrediad, os yw'r canolrif yn cael ei grybwyll, oni bai eu bod yn crybwyll cymharu chwarterlau isaf</p>												

5.

<p>10(a) 44, 76, 80 (b) Correct cumulative frequency diagram, points plotted at upper bounds and joined by a curve or straight line</p>	<p>B1 B2</p>	<p>Accuracy: nearer the intersection of correct lines than any others FT only if cumulative in (a) B1 for points correct but not joined, OR B1 correct apart from 0.5 translation, OR B1 if one error in plotting but joined correctly</p>								
<p>(c)</p> <table border="1"> <tr> <td>Median</td> <td>≈ 58 reading from graph</td> </tr> <tr> <td>Low quartile</td> <td>≈ 55.5 reading from graph</td> </tr> <tr> <td>Upper quartile</td> <td>≈ 61 reading from graph</td> </tr> <tr> <td>Interquartile range</td> <td>≈ 5.5</td> </tr> </table>	Median	≈ 58 reading from graph	Low quartile	≈ 55.5 reading from graph	Upper quartile	≈ 61 reading from graph	Interquartile range	≈ 5.5	<p>B1 B1 B1 B1</p>	<p>FT from their cumulative entries. Not cumulative means no FT. Accuracy of readings ±0.5 FT their UQ – their LQ correctly evaluated. Independent FT</p>
Median	≈ 58 reading from graph									
Low quartile	≈ 55.5 reading from graph									
Upper quartile	≈ 61 reading from graph									
Interquartile range	≈ 5.5									
<p>(d) Range ends correctly indicated (50(cm) and 68(cm)) Median line correctly indicated (approx. 58) UQ and LQ correctly indicated (approx. 61 & 55.5)</p>	<p>B1 B1 B1 B1 10</p>	<p>In (d) FT consistent previous misread of scale Whiskers should be shown If incorrect then FT their median If incorrect then FT their UQ and LQ readings</p>								

6.

<p>10(a) 40, 55, 60 (b) Correct cumulative frequency diagram, points plotted at bounds and joined by a curve or straight line</p>	<p>B1 B2</p>	<p>FT from cumulative (i) . Allow initial plot at the origin. B1 for points correct but not joined, OR B1 correct apart from 0.5 translation, OR B1 if one error in plotting but joined correctly</p>
<p>(c) Median 17 (±0.5) Intention to subtract readings from horizontal axis for vertical 45 & 15 Interquartile range (12±1) (d) General idea of what box – whisker should be Range ends 37 and 2 correctly indicated Median line correctly indicated UQ and LQ correctly indicated</p>	<p>B1 M1 A1 S1 B1 B1 B1</p>	<p>FT from their cumulative diagram. Not cumulative no FT FT from their cumulative diagram. <i>Watch for an answer of 12 from LQ rather than interquartile range, must be IQR is (24-12 =) 12 if working shown</i> FT their median FT their UQ and LQ readings</p>
<p>(e) Strategy: use of median as same number above and below Interpretation: half free + half at £4 Conclusion based on appropriate working that no difference expected, i.e. compares with all at £2</p>	<p>S1 M1 A1 13</p>	

7.

(a) Points $((0,0), (5, 1), (10, 15), (18, 30), (24, 45), (30,55), (40, 60))$ plotted Points joined with a curve or straight line (b) Reason, e.g. 'do not know all the results for each of the intervals' (c) Correct box-and-whisker diagram	B6	B1 for each correct point plotted Ignore additional points for intervals
	B1	Only FT if at least B3 previously awarded and all plots are cumulative
	E1	Ignore additional incorrect details
	B3	Candidates may use original information Only FT their appropriate <u>cumulative</u> frequency graph (if possible) (not from bars) FT must be the best of consistency for either original or 'their graph' Ends of whiskers must be shown B2 for attempt box-and-whisker with <ul style="list-style-type: none"> • both ends correct and any 2 of LQ, median, UQ correct, or • one end correct and LQ, median & UQ all correct
11	B1 for attempt box-and-whisker with <ul style="list-style-type: none"> • both ends correct with any 1 one of LQ, median, UQ correct, or • one end correct with any 2 of LQ, median, UQ correct, or • LQ, median, UQ all correct 	

8.

Applications Unit 1 Summer 2015	Mark	Comment
7(a) May Answer in the range 16 to 18 m^3/s	B1 B1 U1	
(b) February A value between 2 and 4 (m^3/s) inclusive	B1 B1	Do not accept from incorrect working, but allow a correct unsupported answer No FT from incorrect month
(c) May Correct method of calculating the interquartile range, '19.5 to 20' - '11 to 12' (m^3/s) Answers in the range 7.5 to 9 (m^3/s) from correct working where UQ - LQ values are '19.5 to 20' - '11 to 12' (m^3/s)	B1 M1 A1	No FT from incorrect month Do not accept from incorrect working, but allow a correct unsupported answer
(d) Intention to sum 12 mean readings e.g. $5.5+4.5+5.5+8.5+17+15+12+11+9+9.5+13.5+8.5$ $\div 12$ Answer in the range 8.8 (m^3/s) or 10.5 (m^3/s)	M1 m1 A1	The majority of readings should be >10 or <10 as appropriate and the majority of individual readings should not differ by more than ± 1.5 Rounded or truncated. Must be from working. No working, no marks for answer only, an example of minimal acceptable working $118/12 = 9.8$ (m^3/s) <i>If no marks allow SC1 for attempt to sum at least 9 of the values with $\div 12$ shown</i>
	11	