WJEC 2014 Online Exam Review

GCSE Physics Unit 1 Foundation Tier 4463-01

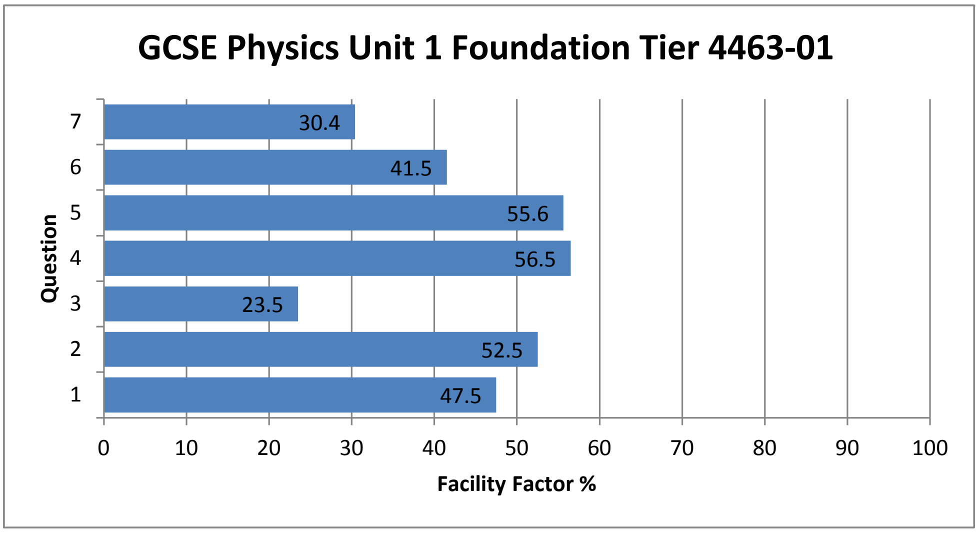
All Candidates' performance across questions

Question Title	*N*	*Mean*	*S D*	*Max Mark*	*F F*	*Attempt %*
1	7886	2.4	1.2	5	47.5	99.9
2	7869	2.1	1	4	52.5	99.7
3	7805	1.4	1.3	6	23.5	98.9
4	7874	6.2	2.3	11	56.5	99.8
5	7877	5.6	2	10	55.6	99.8
6	7864	5	2.4	12	41.5	99.6
7	7790	3.6	2.3	12	30.4	98.7

4

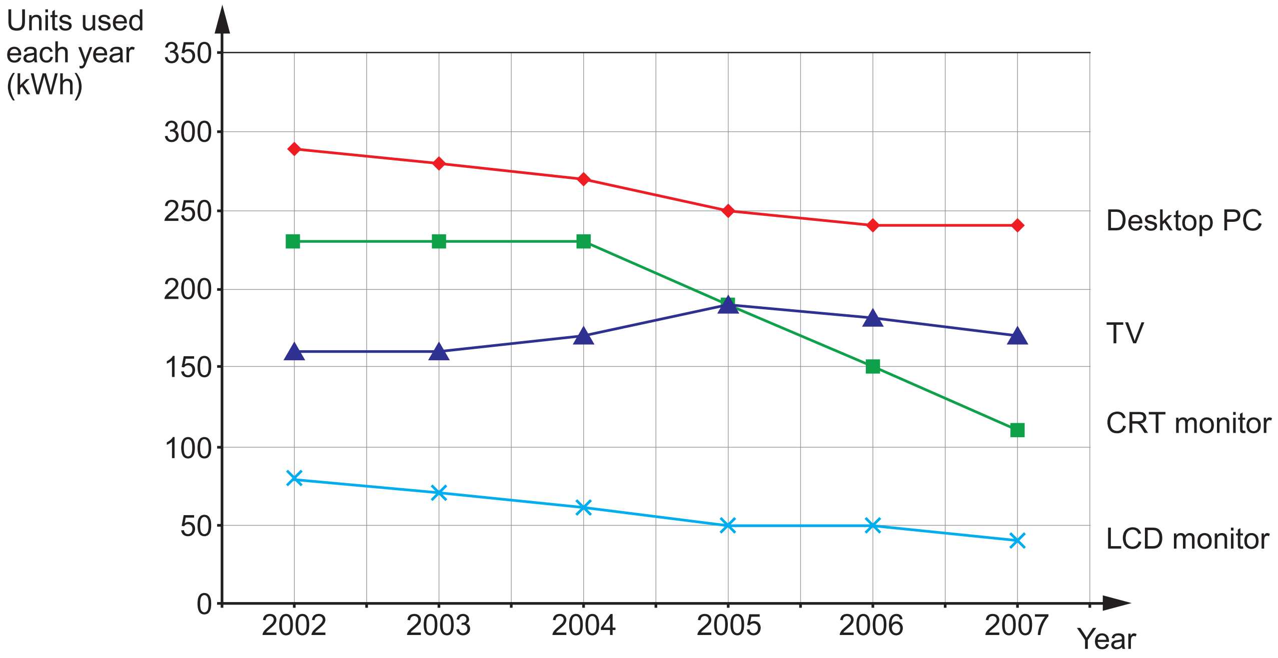
6

7a



Examiner only

4. *(a)* The graph shows the number of units of electricity (kWh) used each year by four different electrical items bought new in each of the years 2002 to 2007.



Use information from the graph above to answer the following questions.

(i) State which item uses the most energy every year. .... [1]

(ii) In which year do the CRT monitor and TV use the same number of units? [1]

....

(iii) In 2005 which item costs 5 times as much to run as the LCD monitor? [1]

....

(iv) Explain which item has the greatest improvement in its efficiency between 2002 and 2007. [2]

....

....

....

Examiner only

(b) Use the information in the table to answer the questions that follow.

	CRT monitor	LCD monitor
Type of monitor		
Electrical power input (W)	90	30
Useful power output (W)	18	20

(i) Use an equation from page 2 to calculate the efficiency of the CRT monitor. [2]

4463 010009

efficiency = ... %

(ii) How many joules of energy does the CRT monitor waste each second? [1]

.... J

(iii) The CRT monitor has a power of 90 W and costs £4.50 to run.

(I) Calculate the cost of using the LCD monitor for the same amount of time. [2]

cost = £ ....

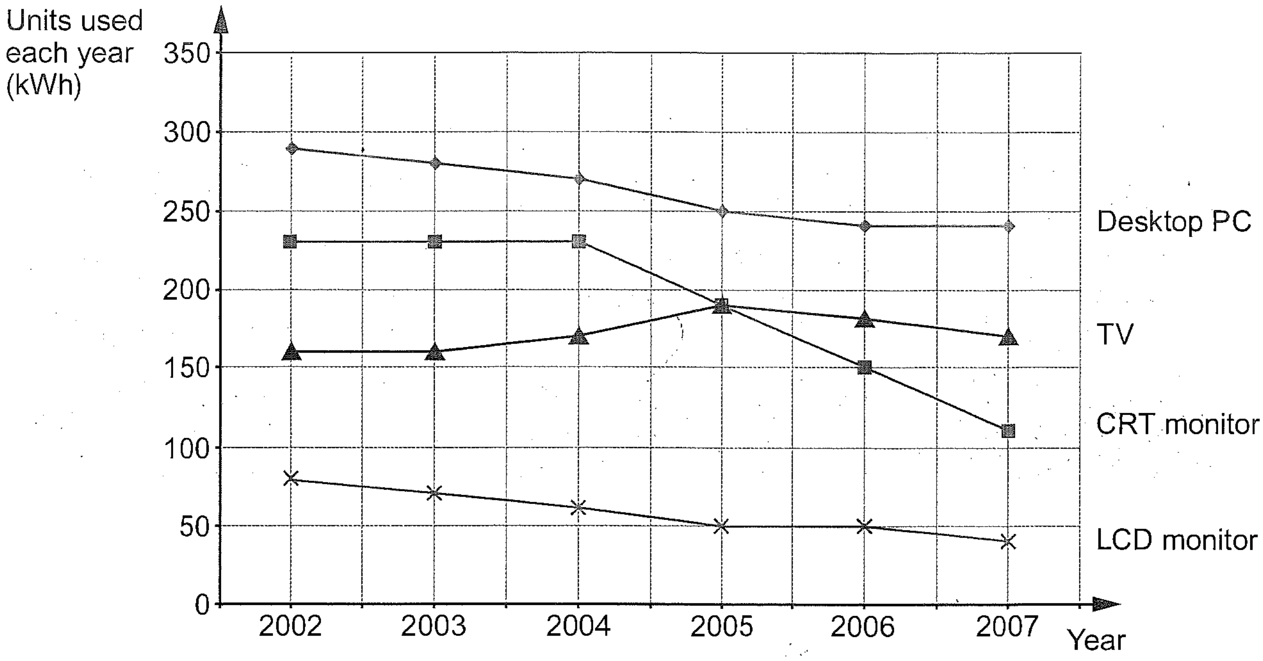
(II) How much would be saved by using the LCD monitor instead of the CRT monitor for this time? [1]

saving = £ ....

11

Examiner only

4. (a) The graph shows the number of units of electricity (kWh) used each year by four different electrical items bought new in each of the years 2002 to 2007.



Use information from the graph above to answer the following questions.

(i) State which item uses the most energy every year. Desktop PC. [1]

(ii) In which year do the CRT monitor and TV use the same number of units? [1]

2005.

(iii) In 2005 which item costs 5 times as much to run as the LCD monitor? [1]

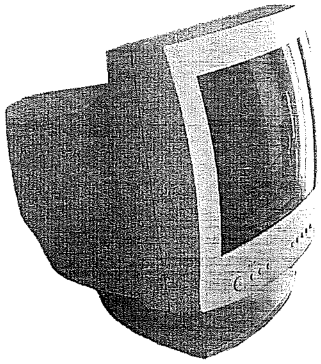
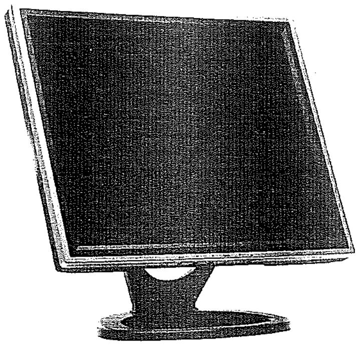
desktop PC.

(iv) Explain which item has the greatest improvement in its efficiency between 2002 and 2007. [2]

CRT monitor as it has started off as second highest in 2002 with 225kwh but decreased down to 110kwh. becoming second best.

Examiner only

(*b*) Use the information in the table to answer the questions that follow.

	CRT monitor	LCD monitor
Type of monitor		
Electrical power input (W)	90	30
Useful power output (W)	18	20

(i) Use an equation from page 2 to calculate the efficiency of the CRT monitor. [2]

efficency = useful energy or power transfer / total energy or power input ×100

18/90 ×100

efficiency = 20 %

(ii) How many joules of energy does the CRT monitor waste each second? [1]

90
− 18
72

72 J

(iii) The CRT monitor has a power of 90 W and costs £4.50 to run.

(I) Calculate the cost of using the LCD monitor for the same amount of time. [2]

units used × cost per unit.

~~90 × 4.50~~

30w × £4.50 = 135

cost = £ 135

(II) How much would be saved by using the LCD monitor instead of the CRT monitor for this time? [1]

90×4.50
= 405

405
− 135
270.

saving = £ 270

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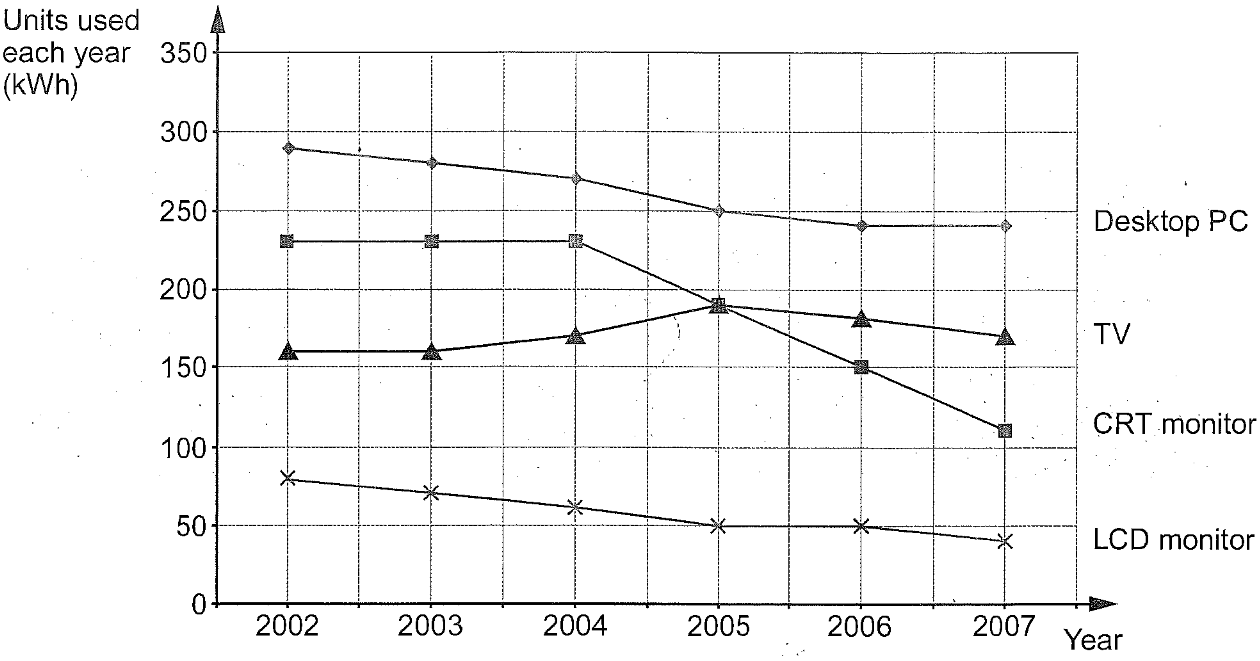
010009

11

Examiner only

4. *(a)* The graph shows the number of units of electricity (kWh) used each year by four different electrical items bought new in each of the years 2002 to 2007.



Use information from the graph above to answer the following questions.

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2005.

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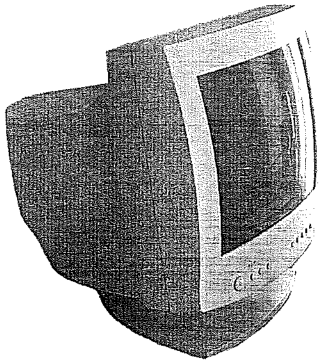
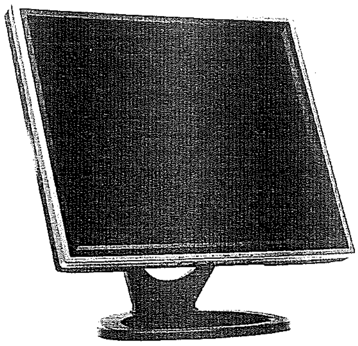
Type of monitor		
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efficicency = useful energy or power transfer / total energy or power input × 100

~~90/18~~ ~~×100~~. 18/90 × 100

efficiency = 20 %

(ii) How many joules of energy does the CRT monitor waste each second? [1]

90 − 18 = 72

72 J

(iii) The CRT monitor has a power of 90 W and costs £4.50 to run.

(I) Calculate the cost of using the LCD monitor for the same amount of time. [2]

units used × cost per unit.

~~90 × 4.50~~

30w × £4.50 = 135 cost = £ 135

(II) How much would be saved by using the LCD monitor instead of the CRT monitor for this time? [1]

90 × 4.50 = 405 ~~135~~ 405 − 135 = 270.

saving = £ 270.

11

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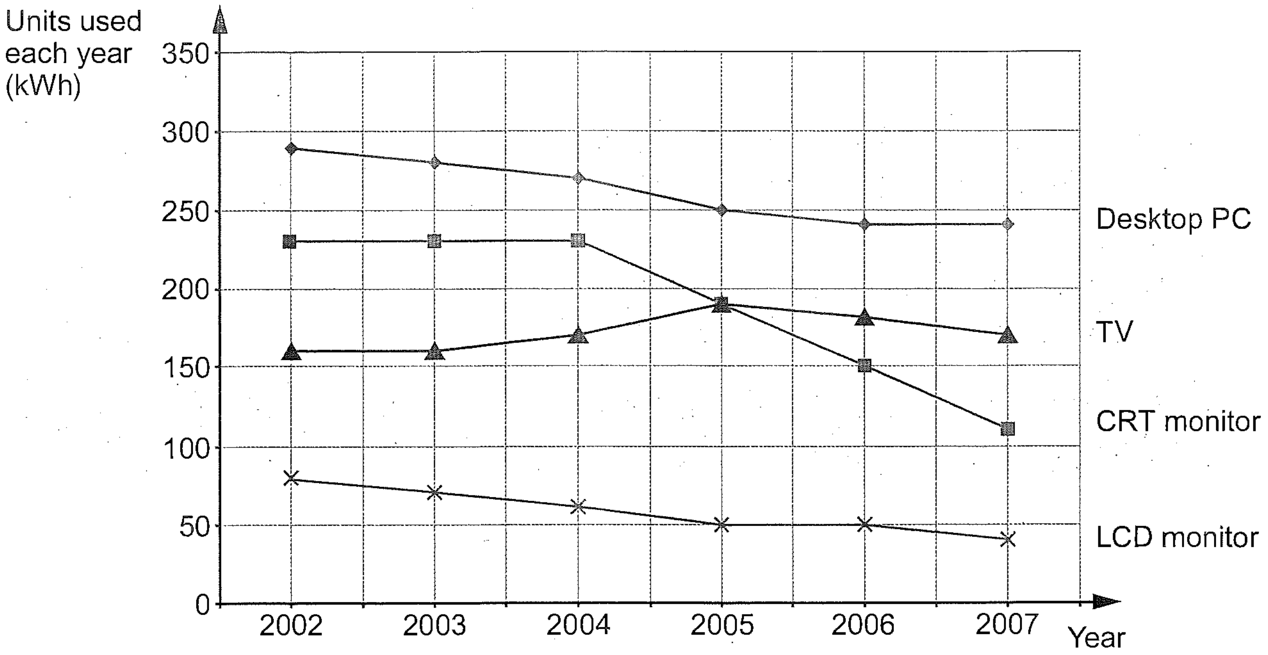
Examiner only

4. (a) The graph shows the number of units of electricity (kWh) used each year by four different electrical items bought new in each of the years 2002 to 2007.



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2005

(iii) In 2005 which item costs 5 times as much to run as the LCD monitor? [1]

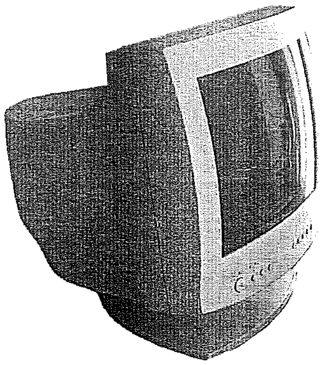
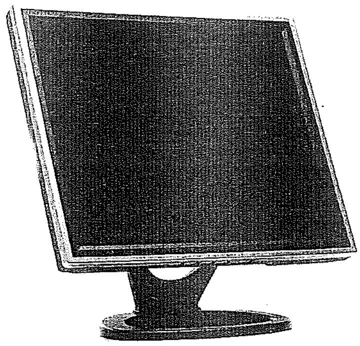
Desktop pc

(iv) Explain which item has the greatest improvement in its efficiency between 2002 and 2007. [2]

the LCd monitor. Because over 6 years it's used less kwh which means it will be cheaper to run.

Examiner only

(*b*) Use the information in the table to answer the questions that follow.

	CRT monitor	LCD monitor
Type of monitor		
Electrical power input (W)	90	30
Useful power output (W)	18	20

(i) Use an equation from page 2 to calculate the efficiency of the CRT monitor. [2]

~~efficiency = $\frac{90}{18}$ ×100~~

efficiency = $\frac{18}{90}$ ×100

efficiency = ~~500~~ 20 %

(ii) How many joules of energy does the CRT monitor waste each second? [1]

60seconds. 90 × 60

54 J

(iii) The CRT monitor has a power of 90 W and costs £4.50 to run.

(I) Calculate the cost of using the LCD monitor for the same amount of time. [2]

cost = 90 × 4.50

cost = £ 40·05

(II) How much would be saved by using the LCD monitor instead of the CRT monitor for this time? [1]

cost = 30 × 4.50

saving = £ 13·05

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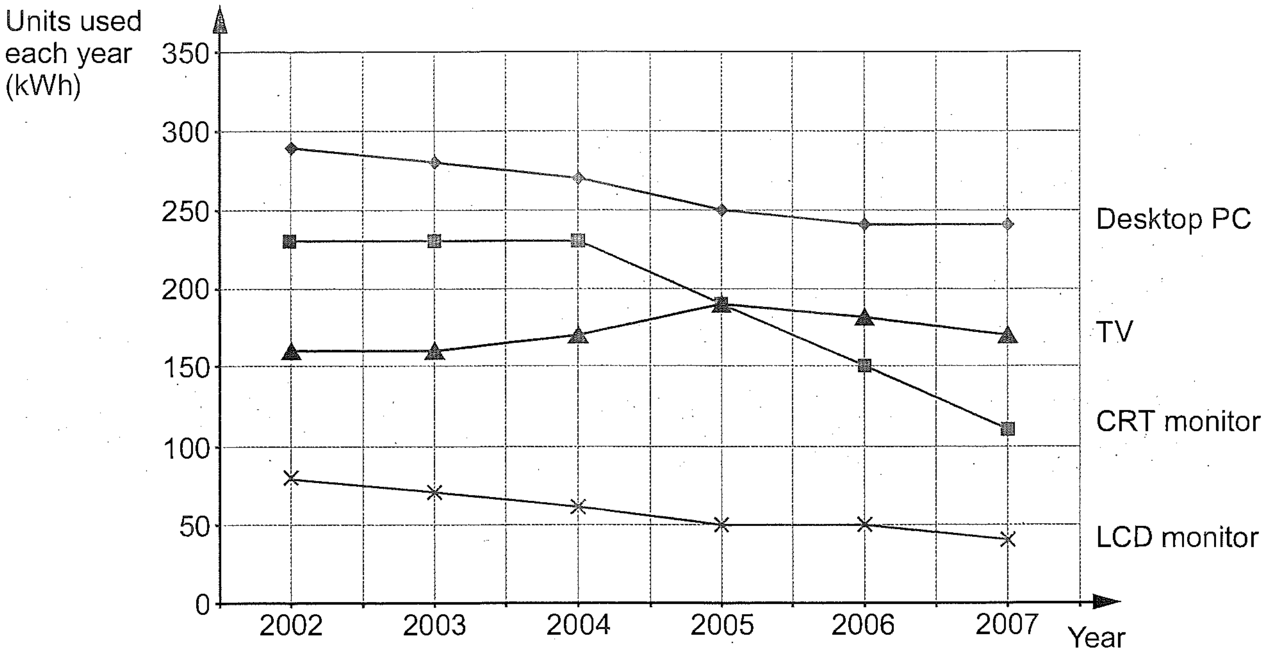
Examiner only

4. (a) The graph shows the number of units of electricity (kWh) used each year by four different electrical items bought new in each of the years 2002 to 2007.



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Desktop pc

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Examiner only

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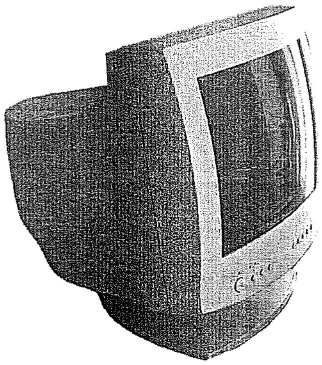
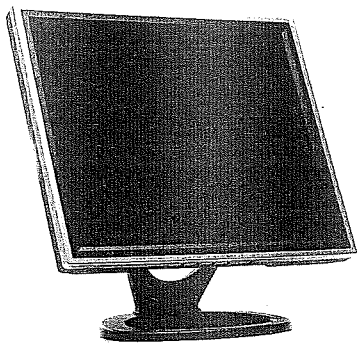
Type of monitor		
Electrical power input (W)	90	30
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(i) Use an equation from page 2 to calculate the efficiency of the CRT monitor. [2]

~~efficiency = 90 / 18 × 100~~

efficiency = 18 / 90 × 100

efficiency = 20 ~~500~~ %

(ii) How many joules of energy does the CRT monitor waste each second? [1]

60seconds. 90 × 60

54 J

(iii) The CRT monitor has a power of 90 W and costs £4.50 to run.

(I) Calculate the cost of using the LCD monitor for the same amount of time. [2]

cost = 90 × 4.50

cost = £ 40 : 05

(II) How much would be saved by using the LCD monitor instead of the CRT monitor for this time? [1]

cost = 30 × 4.50

saving = £ 13 : 05

11

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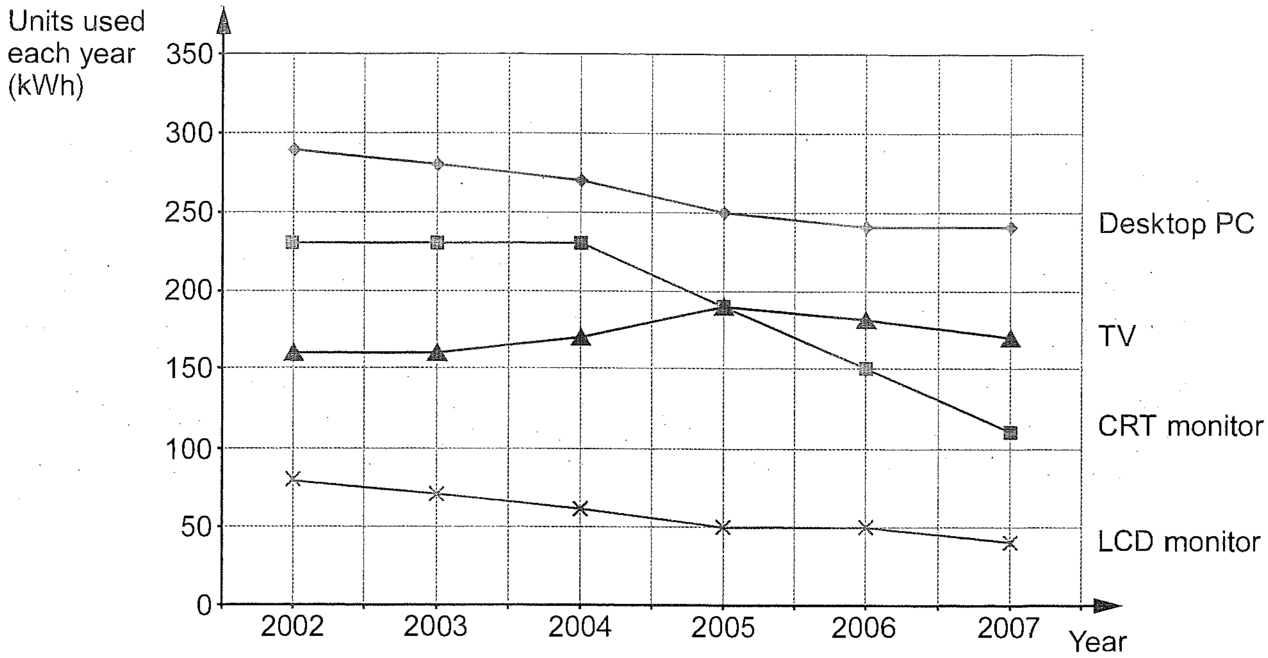
Examiner only

4. (a) The graph shows the number of units of electricity (kWh) used each year by four different electrical items bought new in each of the years 2002 to 2007.



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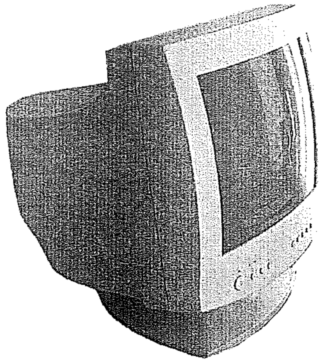
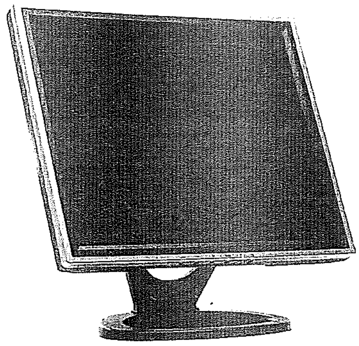
Desktop P.C

(iv) Explain which item has the greatest improvement in its efficiency between 2002 and 2007. [2]

The CRT Monitor; because the units used each year drastically decreased and kept going down each year.

Examiner only

(b) Use the information in the table to answer the questions that follow.

Type of monitor	CRT monitor 	LCD monitor 
Electrical power input (W)	90	30
Useful power output (W)	18	20

(i) Use an equation from page 2 to calculate the efficiency of the CRT monitor. [2]

% efficiency = $\frac{\text{useful energy/power transfer}}{\text{total energy/power input}}$ X 100

efficiency = $\frac{18}{90}$ X 100

efficiency = ...20.... %

(ii) How many joules of energy does the CRT monitor waste each second? [1]

90 − 18 = 72

....72.... J

(iii) The CRT monitor has a power of 90 W and costs £4.50 to run.

(I) Calculate the cost of using the LCD monitor for the same amount of time. [2]

~~30~~ 90 = £4·5 ÷ 3
= £1·5
30 = £1·5

cost = £ ....1.50....

(II) How much would be saved by using the LCD monitor instead of the CRT monitor for this time? [1]

= 4·5 − 1·5
= 3

saving = £ ....3....

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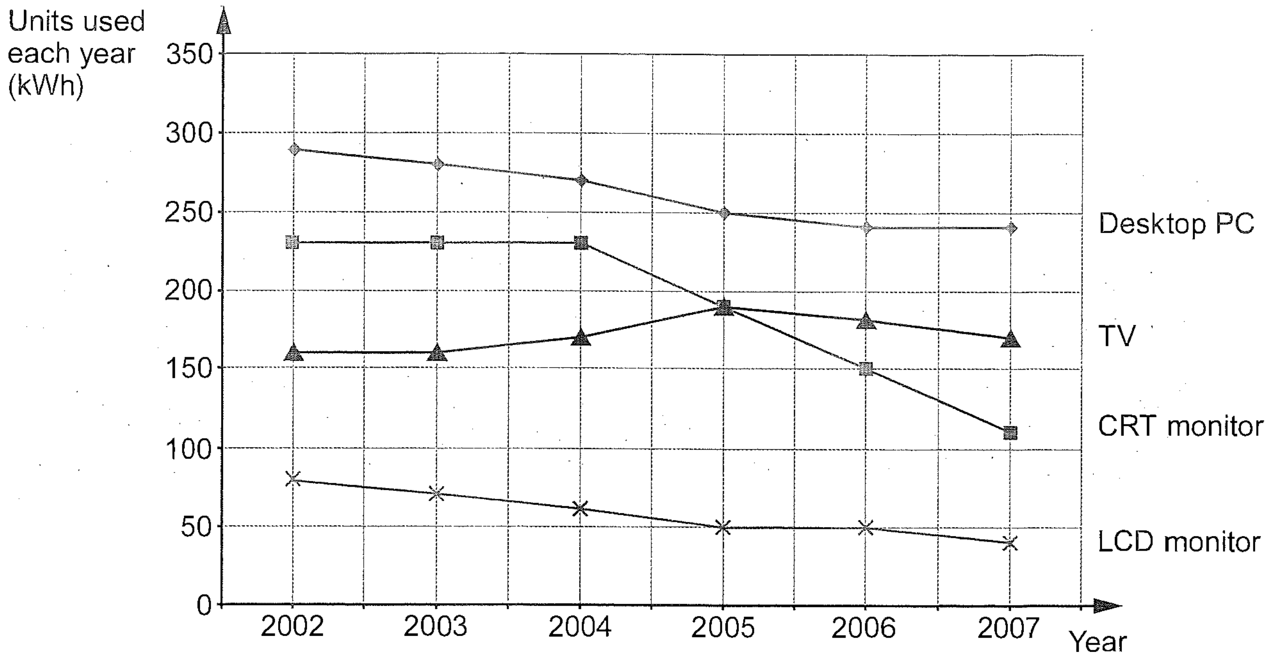
Examiner only

4. (a) The graph shows the number of units of electricity (kWh) used each year by four different electrical items bought new in each of the years 2002 to 2007.



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Examiner only

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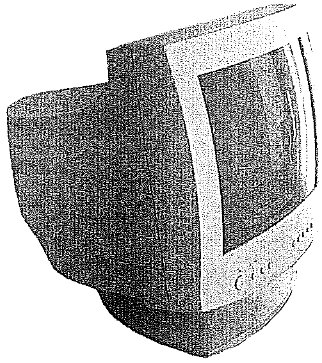
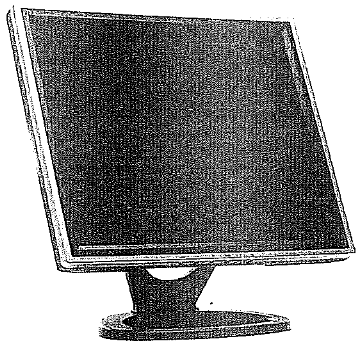
Type of monitor	CRT monitor 	LCD monitor 
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(i) Use an equation from page 2 to calculate the efficiency of the CRT monitor. [2]

% efficiency = $\frac{\text{useful energy/power transfer}}{\text{total energy/power input}}$ x 100

efficiency = $\frac{18}{90}$ x 100

efficiency = 20 %

4463
010009

(ii) How many joules of energy does the CRT monitor waste each second? [1]

90 − 18 = 72

72 J

(iii) The CRT monitor has a power of 90 W and costs £4.50 to run.

(I) Calculate the cost of using the LCD monitor for the same amount of time. [2]

~~30~~ 90 = £4.5 ÷ 3
= £1.5
30 = £1.5

cost = £ 1.50

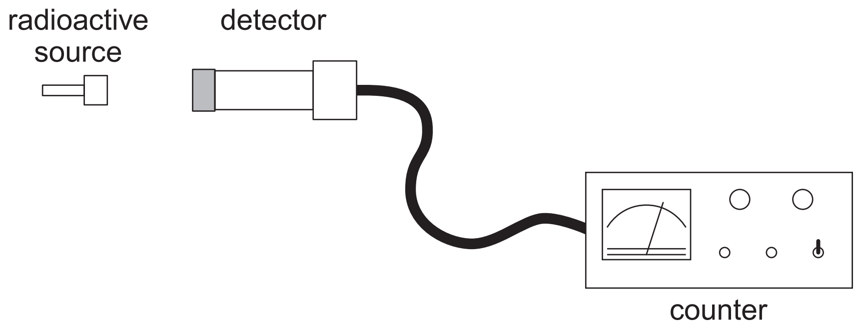
(II) How much would be saved by using the LCD monitor instead of the CRT monitor for this time? [1]

= 4.5 − 1.5
= 3

saving = £ 3

11

6. Many radioactive sources emit more than one kind of radiation. The apparatus below can be used to identify the radiations that a source gives out. Different absorbers are placed in turn between the source and detector and the reading on the counter is taken.



An experiment produced the following results. **All figures have been corrected for background radiation**.

Absorber placed between detector and source	Count rate (counts per minute)
No absorber	5000
Thin card	5000
3 mm thickness of aluminium	4000
10 mm thickness of lead	500

(a) (i) Name **one** radiation that is **not** given out by this source. [1]

....

(ii) How much of the original radiation is absorbed by the aluminium? [1]

.... counts per minute

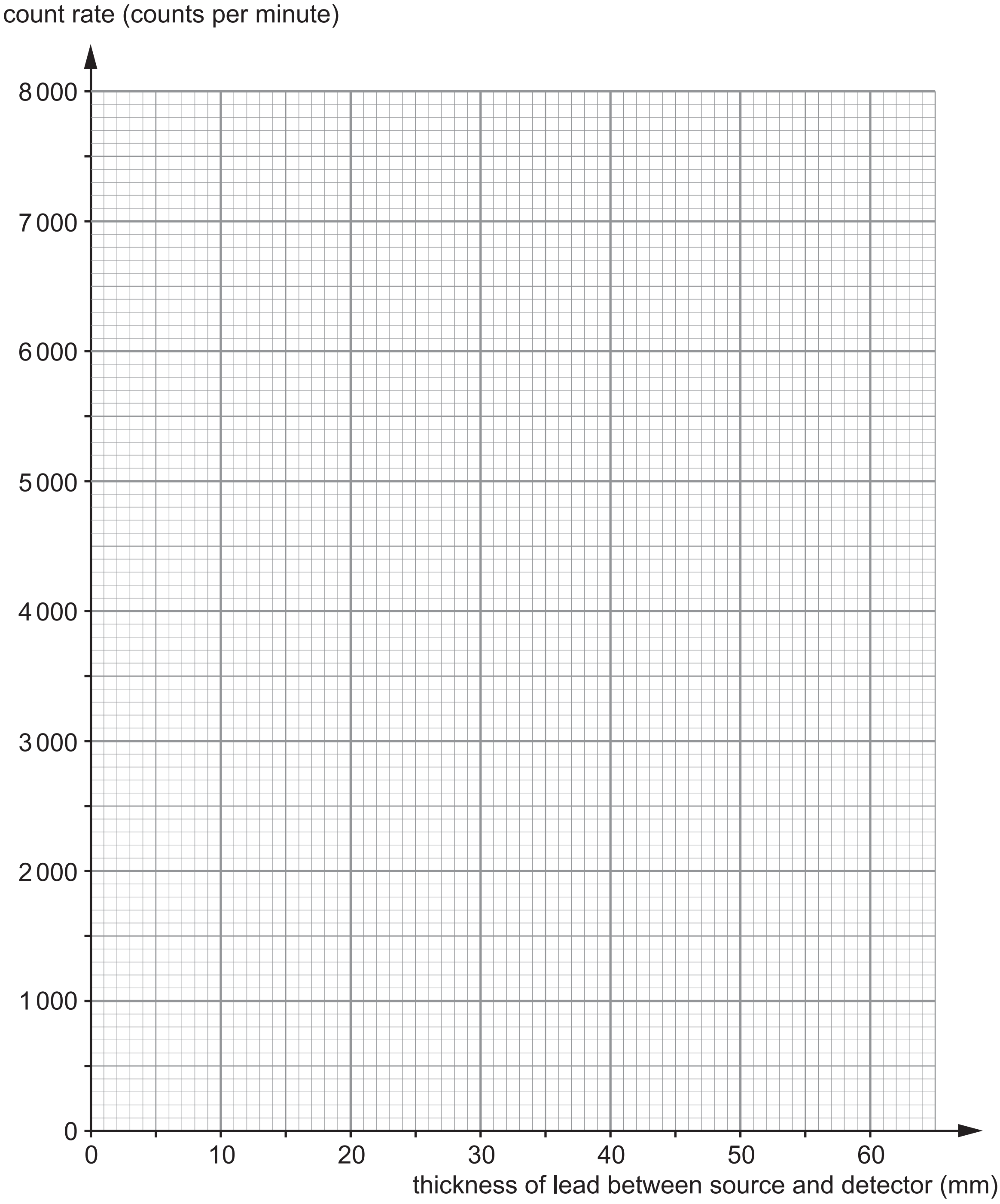
(iii) How much of the original count rate was produced by beta radiation? [1]

.... counts per minute *(b)* When gamma radiation passes through lead from a different source, the counts per minute depend on the thickness of lead between the source and the counter in the way shown in the table.

Thickness of lead between source and detector (mm)	Count rate (counts per minute)
0	8 000
10	4 000
30	1 000
40	500
50	250

Examiner only

(i) Plot the data on the grid below and draw a suitable line. [3]



(ii) Use the graph to describe the relationship between the count rate and the thickness of lead. [2]

....

....

....

Examiner only

(iii) The count rate for a 10 mm thickness of lead is 4 000 counts per minute.

(I) What **fraction** of this would be detected for a 30 mm thickness of lead? [2]

fraction = ...

(II) What count rate would be detected for a 60 mm thickness of lead? [1]

count rate = ... counts per minute

State how you arrived at your answer. [1]

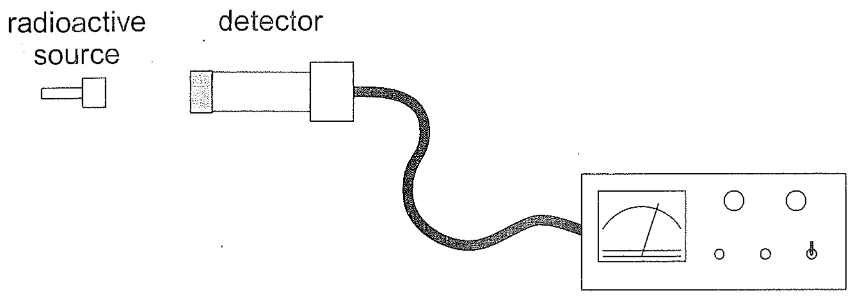
....

....

12

Examiner only

6. Many radioactive sources emit more than one kind of radiation. The apparatus below can be used to identify the radiations that a source gives out. Different absorbers are placed in turn between the source and detector and the reading on the counter is taken.



An experiment produced the following results. **All figures have been corrected for background radiation.**

Absorber placed between detector and source	Count rate (counts per minute)
No absorber	5000
Thin card	5000
3 mm thickness of aluminium	4000
10 mm thickness of lead	500

(a) (i) Name **one** radiation that is **not** given out by this source. [1]

gamma

(ii) How much of the original radiation is absorbed by the aluminium? [1]

4000 counts per minute

(iii) How much of the original count rate was produced by beta radiation? [1]

5000 counts per minute

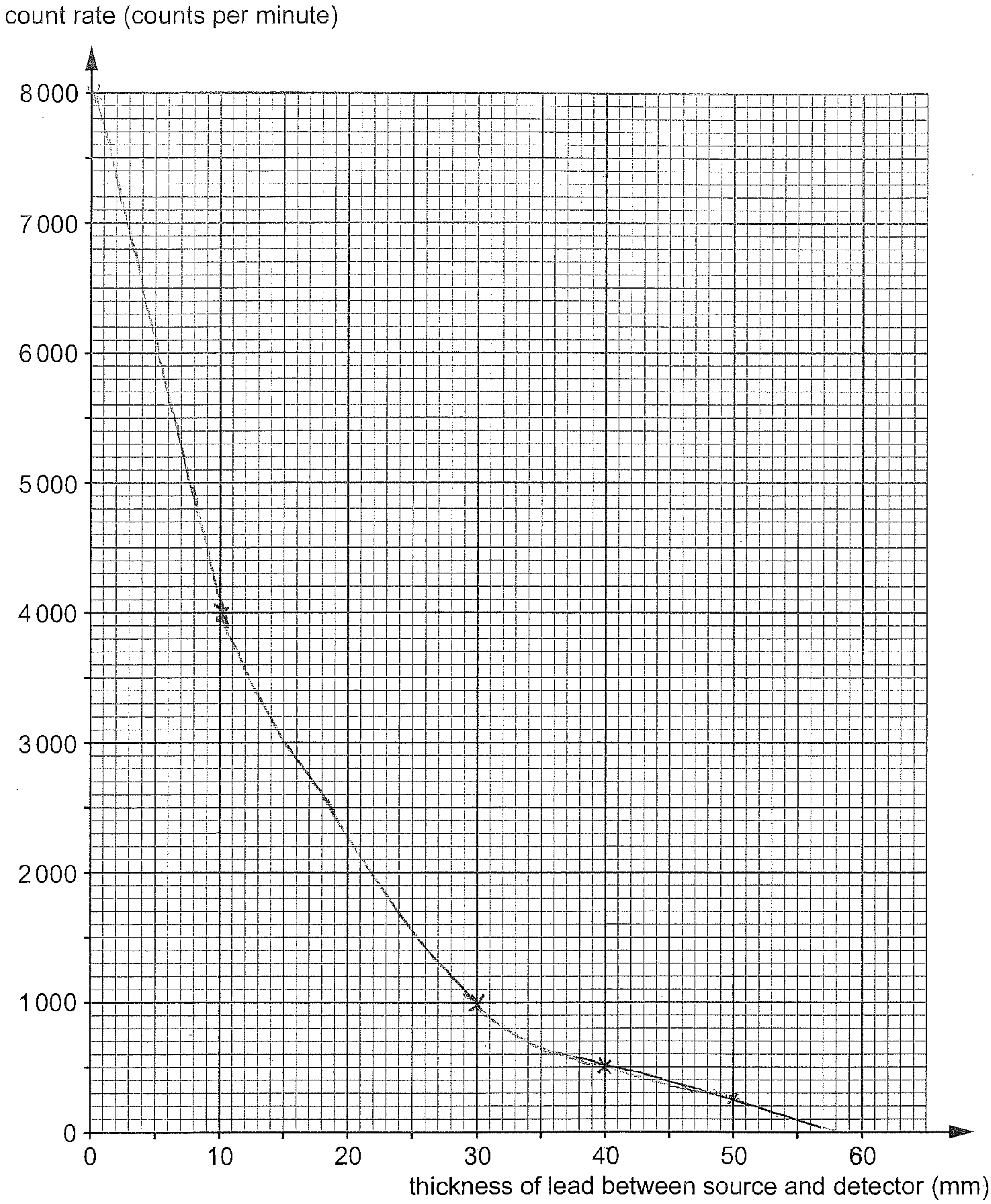
Examiner only

(b) When gamma radiation passes through lead from a different source, the counts per minute depend on the thickness of lead between the source and the counter in the way shown in the table.

Thickness of lead between source and detector (mm)	Count rate (counts per minute)
0	8000
10	4000
30	1000
40	500
50	250

Examiner only

(i) Plot the data on the grid below and draw a suitable line. [3]



(ii) Use the graph to describe the relationship between the count rate and the thickness of lead. [2]

the thicker the lead between the source and the detector, the lower the counts per minute will be.

Examiner only

(iii) The count rate for a 10 mm thickness of lead is 4 000 counts per minute.

(I) What **fraction** of this would be detected for a 30 mm thickness of lead? [2]

30mm = 1000

$\frac{1000}{4000} = \frac{1}{4}$

fraction = $\frac{1}{4}$

(II) What count rate would be detected for a 60 mm thickness of lead? [1]

count rate = 125 counts per minute

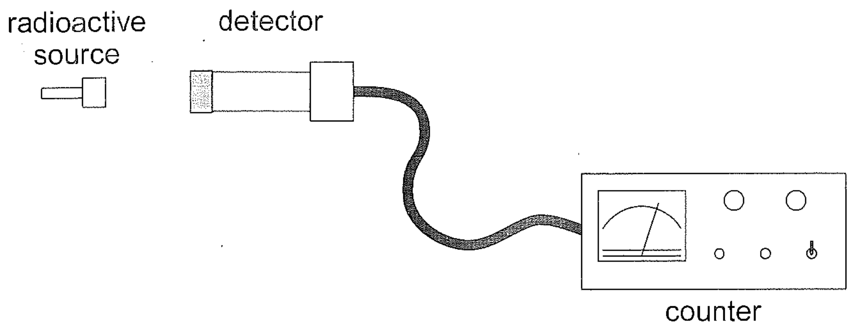
State how you arrived at your answer. cpm = counts per minute [1]

30mm is 1000 cpm, 40mm is half of 1000, 50mm is half of 500 which is 250, so 60mm must be 125 as 125 is half of 250.

12

Examiner only

6. Many radioactive sources emit more than one kind of radiation. The apparatus below can be used to identify the radiations that a source gives out. Different absorbers are placed in turn between the source and detector and the reading on the counter is taken.



An experiment produced the following results. **All figures have been corrected for background radiation.**

Absorber placed between detector and source	Count rate (counts per minute)
No absorber	5000
Thin card	5000
3 mm thickness of aluminium	4000
10 mm thickness of lead	500

(a) (i) Name **one** radiation that is **not** given out by this source. [1]

gamma ....

(ii) How much of the original radiation is absorbed by the aluminium? [1]

4000 .... counts per minute

(iii) How much of the original count rate was produced by beta radiation? [1]

5000 .... counts per minute

Examiner only

(b) When gamma radiation passes through lead from a different source, the counts per minute depend on the thickness of lead between the source and the counter in the way shown in the table.

Thickness of lead between source and detector (mm)	Count rate (counts per minute)
0	8000
10	4000
30	1000
40	500
50	250

Examiner only

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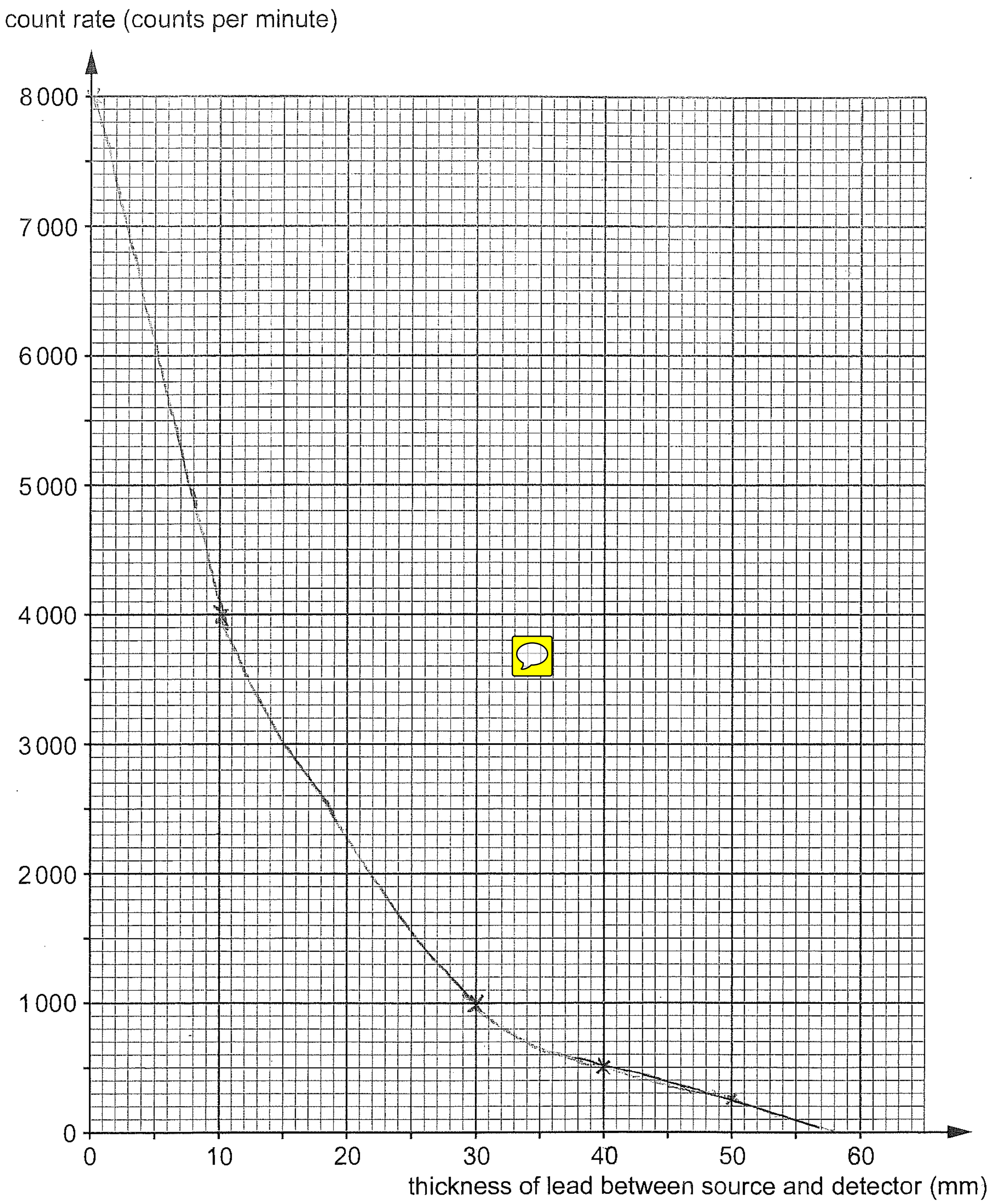

(ii) Use the graph to describe the relationship between the count rate and the thickness of lead. [2]

the thicker the lead between the source and the detector, the lower the counts per minute will be.

Examiner only

(iii) The count rate for a 10 mm thickness of lead is 4 000 counts per minute.

(I) What **fraction** of this would be detected for a 30 mm thickness of lead? [2]

30mm = 1000 $\frac{1000}{4000} = \frac{1}{4}$

fraction = $\frac{1}{4}$

(II) What count rate would be detected for a 60 mm thickness of lead? [1]

count rate = 125 counts per minute

State how you arrived at your answer. cpm = counts per minute [1]

30mm is 1000 cpm, 40mm is half of 1000, 50mm is half of 500, so 60mm must be 125 as 125 is half of 250. which is 250

12

Examiner only

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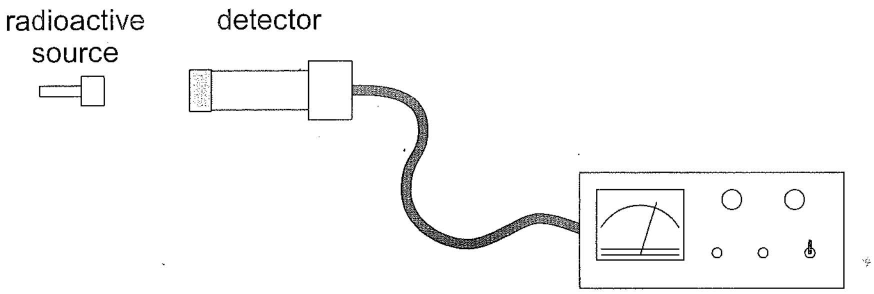

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Thin card	5000
3 mm thickness of aluminium	4000
10 mm thickness of lead	500

(a) (i) Name **one** radiation that is **not** given out by this source. [1]

heat.

(ii) How much of the original radiation is absorbed by the aluminium? [1]

1000 counts per minute

(iii) How much of the original count rate was produced by beta radiation? [1]

500 counts per minute

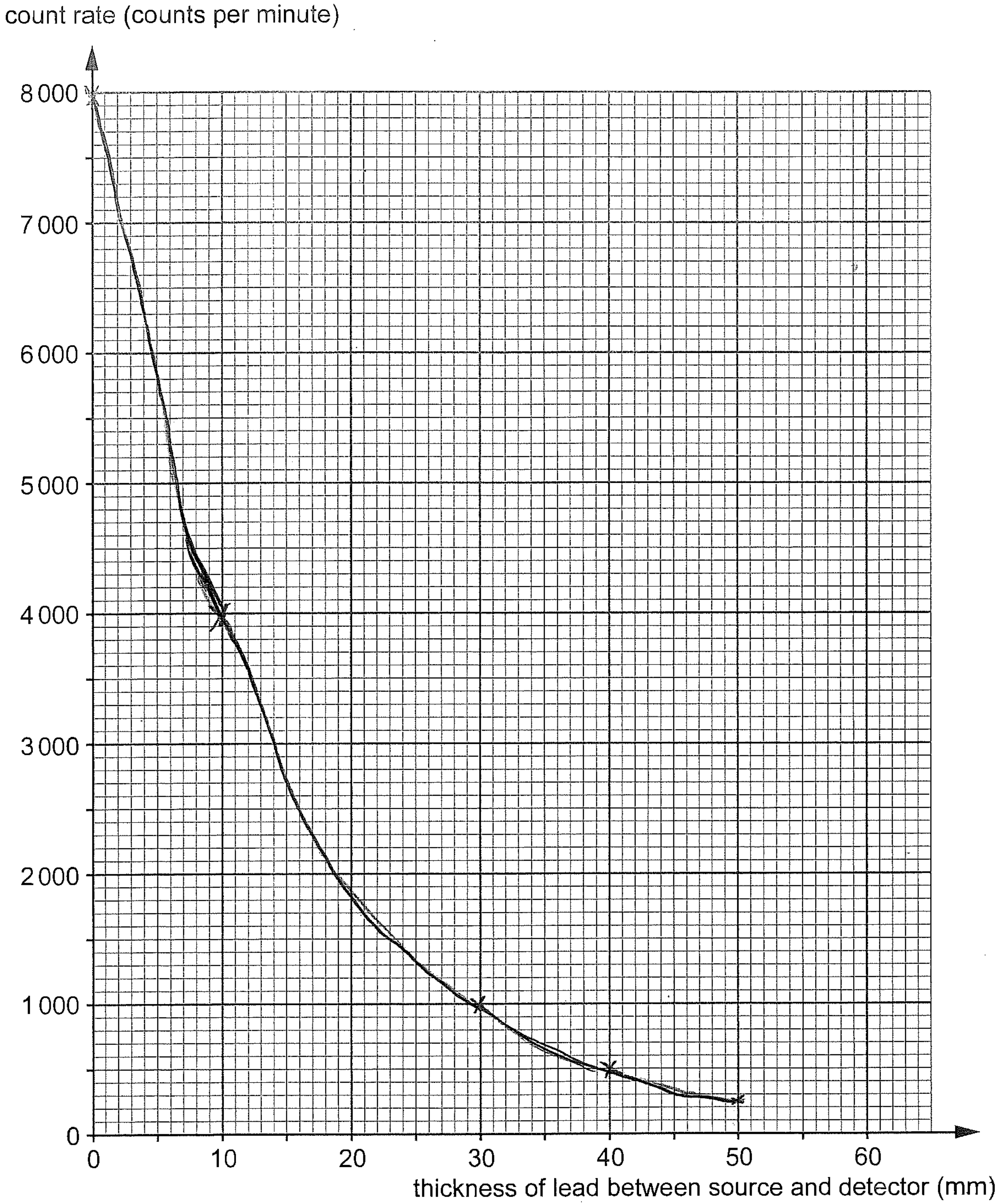
Examiner only

(b) When gamma radiation passes through lead from a different source, the counts per minute depend on the thickness of lead between the source and the counter in the way shown in the table.

Thickness of lead between source and detector (mm)	Count rate (counts per minute)
0	8000
10	4000
30	1000
40	500
50	250

Examiner only

(i) Plot the data on the grid below and draw a suitable line. [3]



(ii) Use the graph to describe the relationship between the count rate and the thickness of lead. [2]

as the thickness of lead got thicker the count rate got less.

Examiner only

(iii) The count rate for a 10 mm thickness of lead is 4 000 counts per minute.

(I) What **fraction** of this would be detected for a 30 mm thickness of lead? [2]

~~4~~ ~~3~~ 4000 ÷ 30

fraction = 133.3

(II) What count rate would be detected for a 60 mm thickness of lead? [1]

count rate = 150 counts per minute

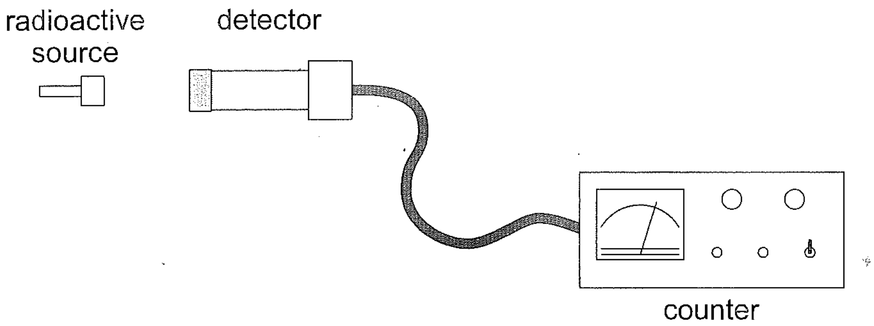
State how you arrived at your answer. [1]

Checked the graph to see where the line met 60.

12

Examiner only

6. Many radioactive sources emit more than one kind of radiation. The apparatus below can be used to identify the radiations that a source gives out. Different absorbers are placed in turn between the source and detector and the reading on the counter is taken.



An experiment produced the following results. **All figures have been corrected for background radiation**.

Absorber placed between detector and source	Count rate (counts per minute)
No absorber	5000
Thin card	5000
3 mm thickness of aluminium	4000
10 mm thickness of lead	500

(a) (i) Name **one** radiation that is **not** given out by this source. [1]

heat.

(ii) How much of the original radiation is absorbed by the aluminium? [1]

1000 counts per minute

(iii) How much of the original count rate was produced by beta radiation? [1]

500 counts per minute

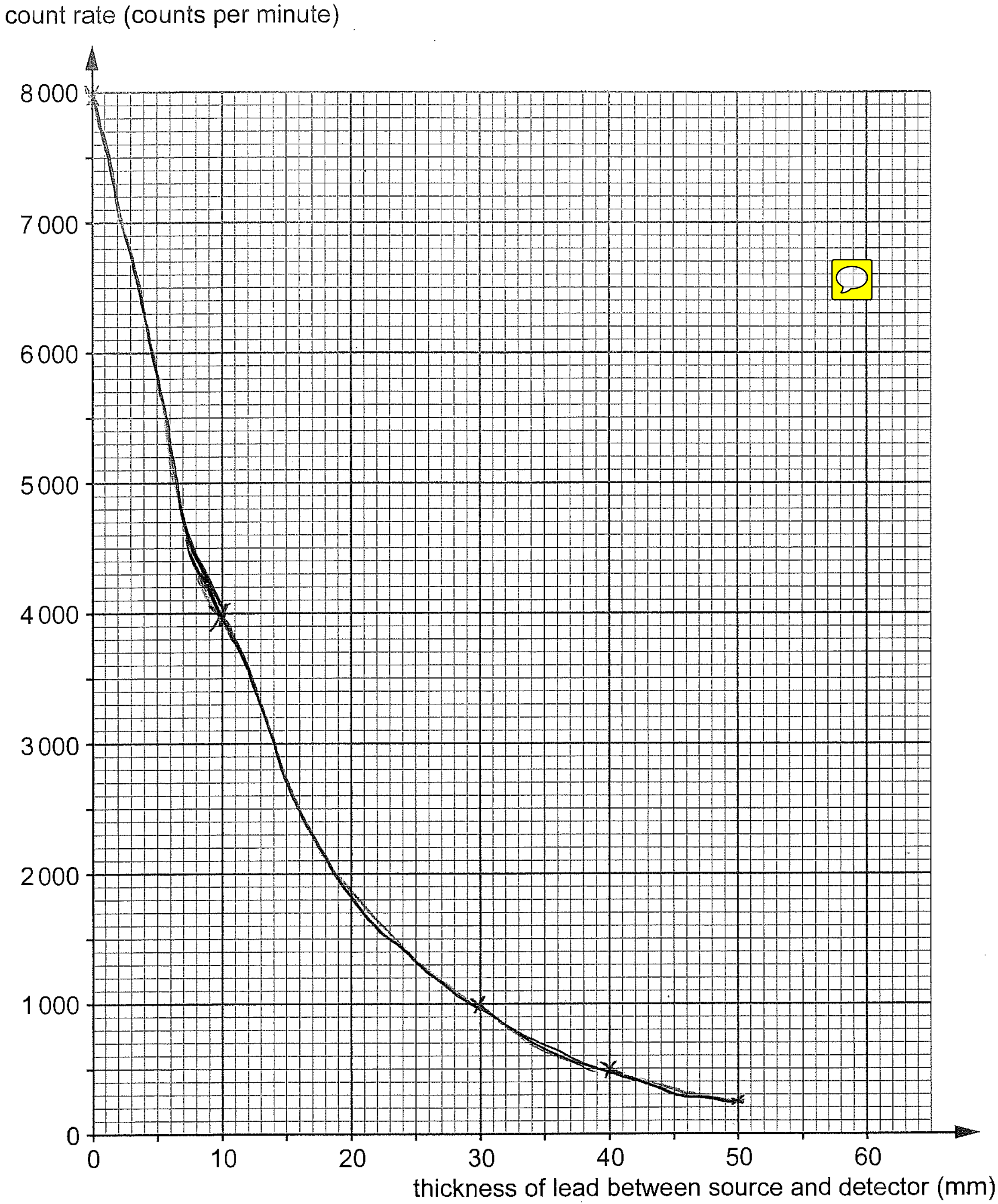
Examiner only

(b) When gamma radiation passes through lead from a different source, the counts per minute depend on the thickness of lead between the source and the counter in the way shown in the table.

Thickness of lead between source and detector (mm)	Count rate (counts per minute)
0	8000
10	4000
30	1000
40	500
50	250

Examiner only

(i) Plot the data on the grid below and draw a suitable line. [3]



(ii) Use the graph to describe the relationship between the count rate and the thickness of lead. [2]

as the thickness of lead got thicker the count rate got less.

Examiner only

iii) The count rate for a 10 mm thickness of lead is 4 000 counts per minute.

(I) What **fraction** of this would be detected for a 30 mm thickness of lead? [2]

~~4~~ ~~3~~ 4000 ÷ 30

fraction = 133.3

(II) What count rate would be detected for a 60 mm thickness of lead? [1]

count rate = 150 counts per minute

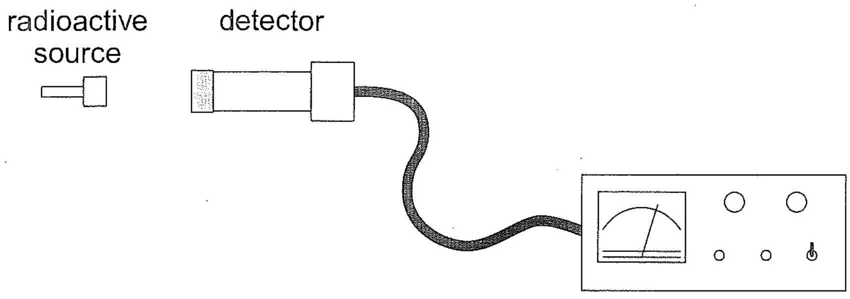
State how you arrived at your answer. [1]

Checked the graph to see where the line met 60.

12

Examiner only

6. Many radioactive sources emit more than one kind of radiation. The apparatus below can be used to identify the radiations that a source gives out. Different absorbers are placed in turn between the source and detector and the reading on the counter is taken.



An experiment produced the following results. **All figures have been corrected for background radiation**.

Absorber placed between detector and source	Count rate (counts per minute)
No absorber	5000
Thin card	5000
3 mm thickness of aluminium	4000
10 mm thickness of lead	500

(a) (i) Name **one** radiation that is **not** given out by this source. [1]

Gamma ....

(ii) How much of the original radiation is absorbed by the aluminium? [1]

1000 .... counts per minute

(iii) How much of the original count rate was produced by beta radiation? [1]

4000 .... counts per minute

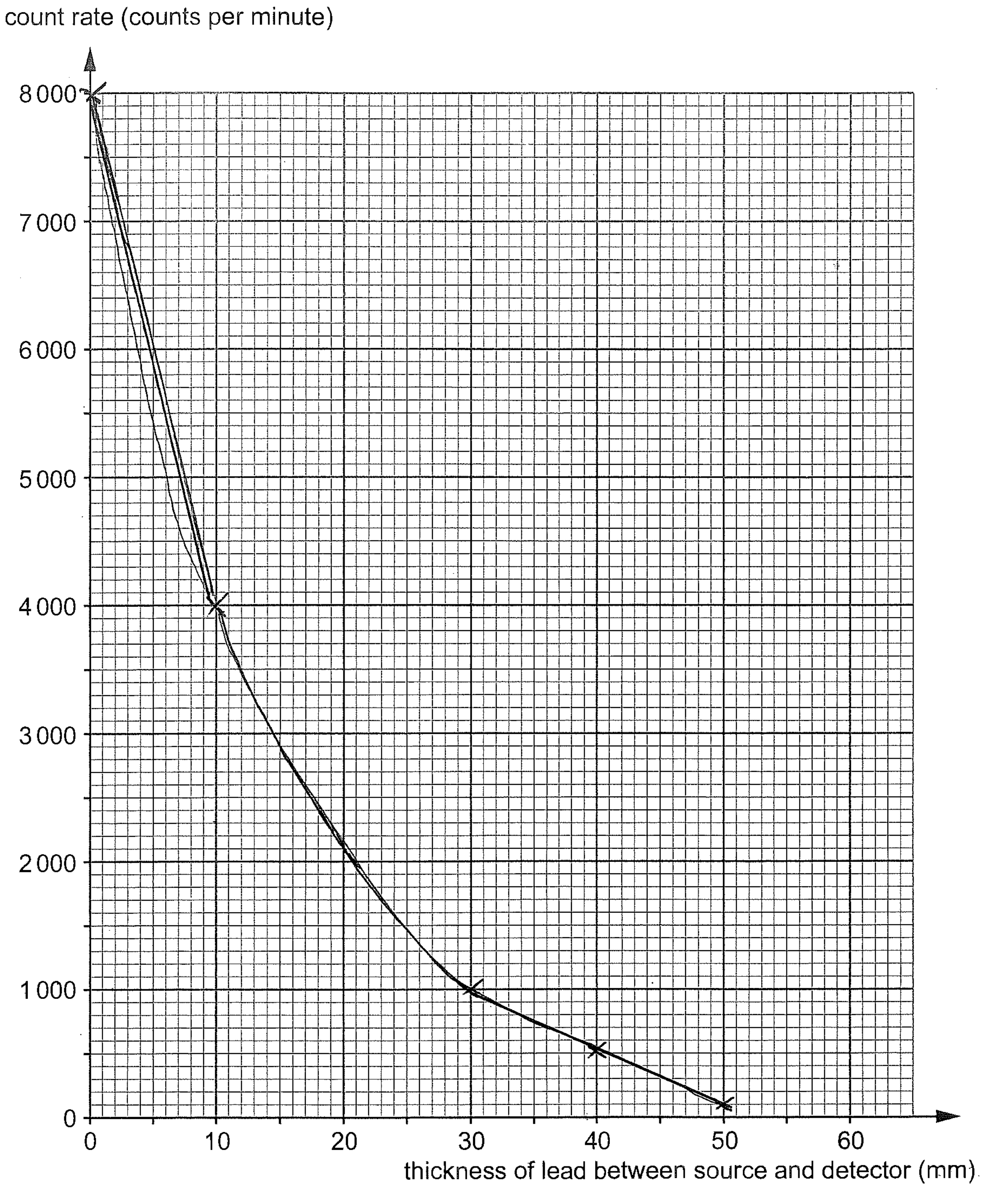
Examiner only

(b) When gamma radiation passes through lead from a different source, the counts per minute depend on the thickness of lead between the source and the counter in the way shown in the table.

Thickness of lead between source and detector (mm)	Count rate (counts per minute)
0	8000
10	4000
30	1000
40	500
50	250

Examiner only

(i) Plot the data on the grid below and draw a suitable line. [3]



(ii) Use the graph to describe the relationship between the count rate and the thickness of lead. [2]

the higher the count rate the lower the thickeness of lead between source and detector.

Examiner only

(iii) The count rate for a 10 mm thickness of lead is 4 000 counts per minute.

(I) What **fraction** of this would be detected for a 30 mm thickness of lead? [2]

~~30~~ 3×4000 = 12,000. ~~4~~ $\frac{1}{4}$.

30 ÷ 12000 × 100 = $\frac{1}{4}$.

fraction = ~~[illegible]~~

(II) What count rate would be detected for a 60 mm thickness of lead? [1]

12000 × ~~6~~3 = 24000

count rate = 24000 counts per minute

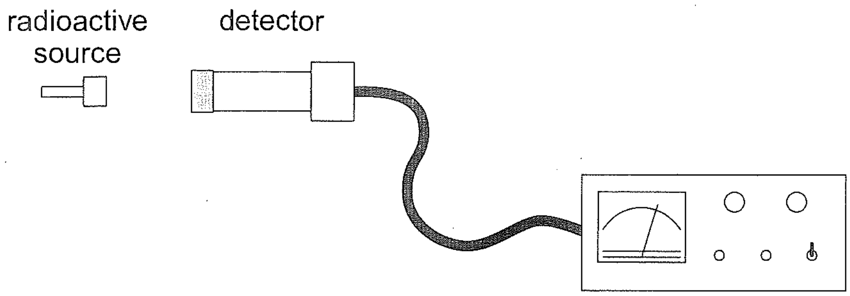
State how you arrived at your answer. [1]

12000 × 3 = 24000.

12

Examiner only

6. Many radioactive sources emit more than one kind of radiation. The apparatus below can be used to identify the radiations that a source gives out. Different absorbers are placed in turn between the source and detector and the reading on the counter is taken.



An experiment produced the following results. **All figures have been corrected for background radiation**.

Absorber placed between detector and source	Count rate (counts per minute)
No absorber	5000
Thin card	5000
3 mm thickness of aluminium	4000
10 mm thickness of lead	500

(a) (i) Name **one** radiation that is **not** given out by this source. [1]

Gamma

(ii) How much of the original radiation is absorbed by the aluminium? [1]

1000 counts per minute

(iii) How much of the original count rate was produced by beta radiation? [1]

4000 counts per minute

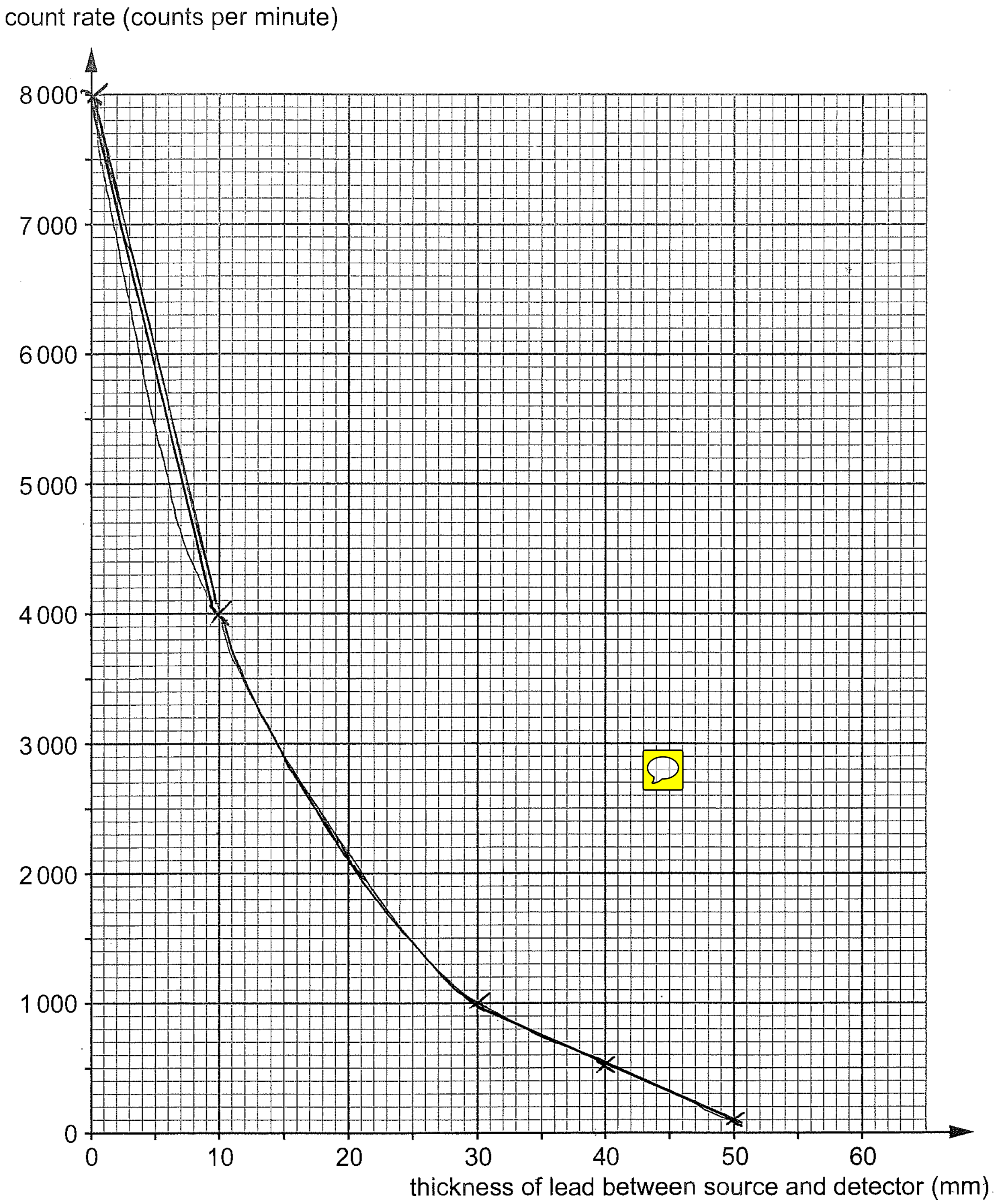
Examiner only

(b) When gamma radiation passes through lead from a different source, the counts per minute depend on the thickness of lead between the source and the counter in the way shown in the table.

Thickness of lead between source and detector (mm)	Count rate (counts per minute)
0	8 000
10	4 000
30	1 000
40	500
50	250

Examiner only

(i) Plot the data on the grid below and draw a suitable line. [3]



(ii) Use the graph to describe the relationship between the count rate and the thickness of lead. [2]

the higher the count rate the lower the thickeness of lead between source and detector.

Examiner only

(iii) The count rate for a 10 mm thickness of lead is 4 000 counts per minute.

(I) What **fraction** of this would be detected for a 30 mm thickness of lead? [2]

~~30~~ 3×4000=12,000

30÷12000 ×100=1/4.

fraction = ~~4~~ 1/4.

(II) What count rate would be detected for a 60 mm thickness of lead? [1]

12000×~~6~~3=24000

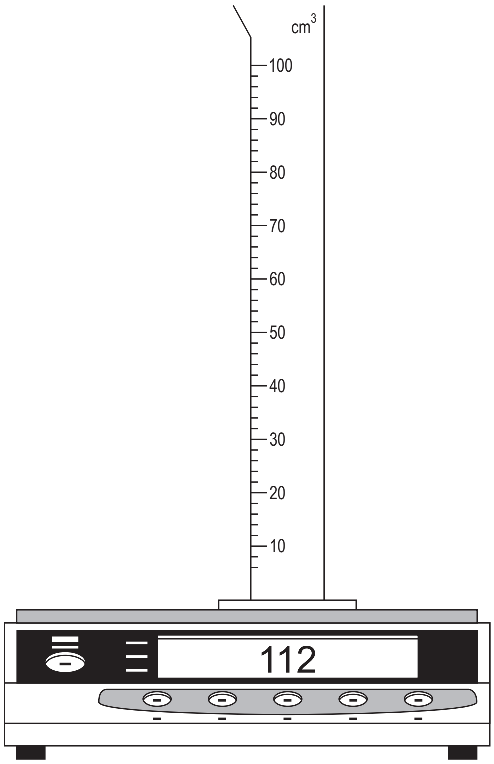
count rate = 24000 counts per minute

State how you arrived at your answer. [1]

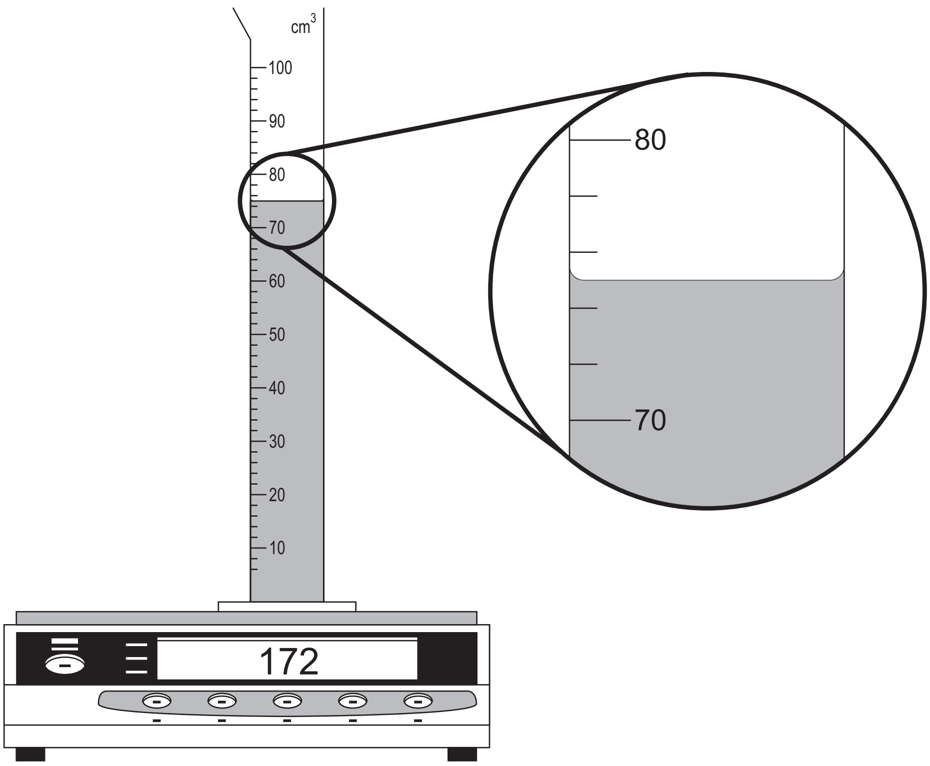
12000 ×3=24000.

12

7. *(a)* A pupil wants to find the density of an oil. She uses a chemical balance which measures to the nearest gram (g). She places an empty measuring cylinder on to the balance.



She pours some oil into the cylinder. The level of oil in the measuring cylinder is shown.



Examiner only

(i) Use this data to find the density of oil.

- Use an equation from page 2.
- Show all your workings.
- Explain each stage in your calculation. [6 QWC]

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(ii) State **two** ways in which the density of the oil could be found to a greater accuracy. [2]

1. ....

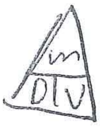
2. ....

Examiner only

(i) Use this data to find the density of oil.

- Use an equation from page 2.
- Show all your workings.
- Explain each stage in your calculation. [6 QWC]

Density = mass (in grams) / volume (in cm³)



mass ~~Density~~ = 60 ~~[illegible]~~g. This is shown as the mass has increased by 60g when the oil has been added, on the chemical balance. (cylinder was empty before and weighed 112g which increased to 172g)

volume = 75 cm³ as the measuring ~~measing~~ cylinder shows the oil is directly between 70 and 80 cm³

Therefore; to calculate the density, we must use ~~using~~ the equation.

Density = $\frac{60}{75}$ = 0·8 g/cm³

0·8 g/cm³ is the density of oil

(ii) State **two** ways in which the density of the oil could be found to a greater accuracy. [2]

1. When the cylinder is on the balance ensure it is at 0g.
2. ~~(Use laboratory equipment)~~ measure g (and cm³) to ~~nearest~~ decimal not nearest gram.

4463
020009

Examiner only

(i) Use this data to find the density of oil.

- Use an equation from page 2.
- Show all your workings.
- Explain each stage in your calculation. [6 QWC]

Density = $\frac{\text{mass (in grams)}}{\text{volume (in cm}^3\text{)}}$

m / D V

mass ~~Density~~ = 60 g. This is shown as the mass has increased by 60 g when the oil has been added, on the chemical balance. (cylinder was empty before and weighed 112g which increased to 172g)

volume = 75 cm^3 as the measuring ~~measing~~ cylinder shows the oil is directly between 70 and 80 cm^3

Therefore, to calculate the density, we must use the equation.

Density = $\frac{60}{75}$ = 0.8 g/cm^3

0.8 g/cm^3 is the density of oil

(ii) State **two** ways in which the density of the oil could be found to a greater accuracy. [2]

1. When the cylinder is on the balance ensure it is at 0g.
2. ~~(Use laboratory equipment)~~ measure g (and cm^3) to ~~nearest~~ decimal not nearest gram.

4463
020009

Examiner only

(i) Use this data to find the density of oil.

- Use an equation from page 2.
- Show all your workings.
- Explain each stage in your calculation. [6 QWC]

density = mass / volume

density = 172 / 75

= 2.29 cm³ (2dp). Nearest whole number would = 2 cm³.

To find the mass of the oil in her project I looked at the bottom of the page towards the weighing scales, as I looked, it measured 172 so thats how I got the mass. For my volume of oil, i looked at the close up and found out that it went up in 2's. As the liquid was between 74 and 76, it must of meant that it was 75 cm³, so then I used that to help me find the density. For the final stage, I went back to the first page and got the formula. I used the data I had found and did what the equation asked, and thats how I had got my answer.

(ii) State **two** ways in which the density of the oil could be found to a greater accuracy. [2]

1. more accurate weighing scales.
2. put the oil in the container more carefully

Examiner only

(i) Use this data to find the density of oil.

- Use an equation from page 2.
- Show all your workings.
- Explain each stage in your calculation. [6 QWC]

density = $\frac{\text{mass}}{\text{volume}}$

density = $\frac{172}{75}$

= 2.29 cm^3 (2dp). Nearest whole number would = 2 cm^3.

To find the mass of the oil in her project I looked at the bottom of the page towards the weighing scales, as I looked, it measured 172 so thats how I got the mass. For my volume of oil, i looked at the close up and found out that it went up in 2's. As the liquid was between 74 and 76, it must of meant that it was 75 cm^3, so then I used that to help me find the density. For the final stage, I went back to the first page and got the formula. I used the data I had found and did what the equation asked, and thats how I had got my answer.

(ii) State **two** ways in which the density of the oil could be found to a greater accuracy. [2]

1. more accurate weighing scales.
2. put the oil in the container more carefully

Examiner only

(i) Use this data to find the density of oil.

- Use an equation from page 2.
- Show all your workings.
- Explain each stage in your calculation. [6 QWC]

density = $\frac{\text{mass}}{\text{volume}}$ $\left(\rho = \frac{m}{V}\right)$

This is the equation I must use to find the density.

level of oil = 75g

mass of oil = 172 − 112 → I must take away the

= 60 weight of the measuring

cylinder too.

using my equation, I carryout the sum;

$\frac{60}{75} = 0.8$

so, the density of the oil is 0.8.

showing that the oil has a very low density

(ii) State **two** ways in which the density of the oil could be found to a greater accuracy. [2]

1. using a different method of measurement for accuracy
2. repeating the test and comparing results

Examiner only

(i) Use this data to find the density of oil.

- Use an equation from page 2.
- Show all your workings.
- Explain each stage in your calculation. [6 QWC]

density = $\frac{\text{mass}}{\text{volume}}$ $\left(\rho = \frac{m}{V}\right)$

This is the equation I must use to find the density.

level of oil = 75g

mass of oil = 172 − 112 → I must take away the
= 60 weight of the measuring
cylinder too.

using my equation, I carry out the sum;

$\frac{60}{75}$ = 0.8

so, the density of the oil is 0.8.

showing that the oil has a very low density.

(ii) State **two** ways in which the density of the oil could be found to a greater accuracy. [2]

1. using a different method of measurement for accuracy
2. repeating the test and comparing results