. From the list of numbers

3 6 8 14 16 28 41 64

(a) write down the cube numbers

8 and 64

(2)

(b) write down the cube root of 27.

3

(1)

2. Mary is organising a charity hot dog sale.
There are 18 bread rolls in each packet.
There are 15 hot dogs in each packet.
Mary buys exactly the same number of bread rolls as hot dogs.

What is the smallest number of each packet that Mary can buy?

LCM of 18 + 15 is 90

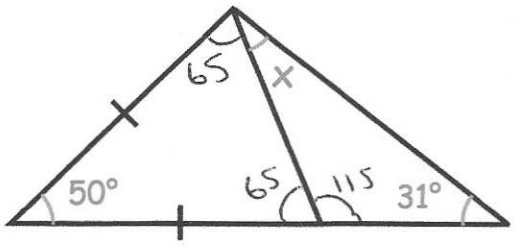
Hot dogs 15 30 45 60 75 90

Rolls 18 36 54 72 90

5 packets of bread rolls

6 packets of hot dogs

3

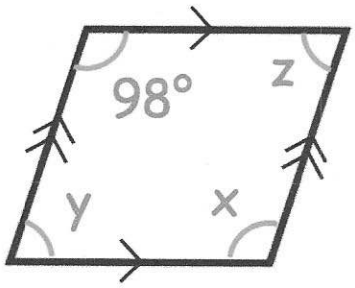


Find the size of the angle marked x.

34 °

(4)

4. Shown below is a parallelogram.



(a) Find x

98 °

(1)

(b) Find y

82 °

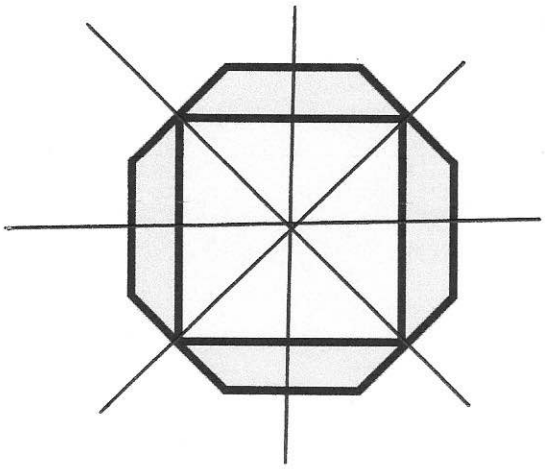
(1)

(c) Find z

82 °

(1)

5 . A square is drawn inside of a regular octagon.



(a) Write down the order of rotational symmetry of the ~~hexagon~~ octagon

4

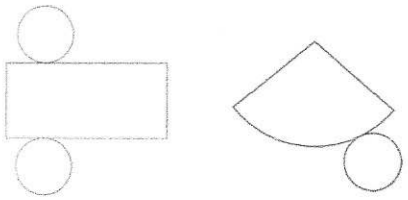
.....

(1)

(b) On the diagram draw in all the lines of symmetry.

(2)

6 . Below are the nets of two solid shapes.



A B

(a) Write down the shape that is made from Net A.

Cylinder

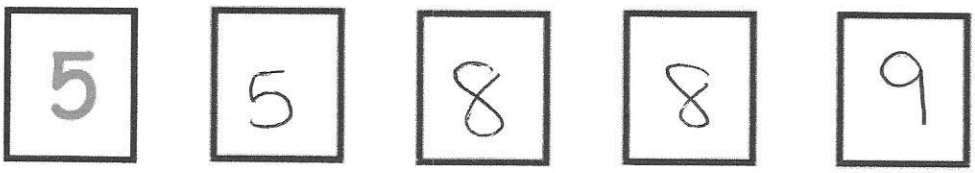
(1)

(b) Write down the shape that is made from Net B.

Cone

(1)

7. Shown below are five cards which are arranged in order from smallest to largest



The range of the cards is 4. 5 + 4 = 9
The median of the cards is 8. middle value
The mean of the cards is 7. 7 × 5 = 35

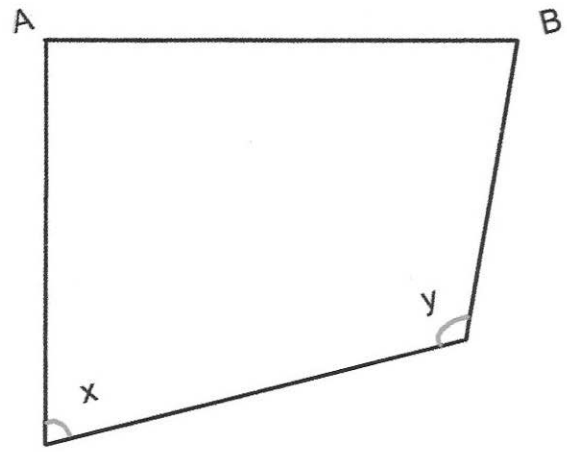
Work out the 4 missing numbers. ⇒ must add up to 35

35 − 5 − 8 − 9 = 13

∴ 5, 8

5, 8, 8 and 9

(4)



(a) Measure the length of the line AB.

☆ Depends on printing ☆ .....cm **(1)**

(b) What type of angle is x?

acute **(1)**

(c) Measure the size of angle y.

114 ° **(1)**

9 . Write down all the prime numbers between 10 and 20.

11, 13, 17, 19

(2)

10.

$1^2 = 1$

$0^2 = 0$

$0.5^2 = 0.25$

$\therefore$ Megan is wrong

11. (a) Write 50 as a product of its prime factors.

$2 \times 5 \times 5$

or 2×5^2

.....

(2)

(b) Find the Lowest Common Multiple (LCM) of 32 and 50.

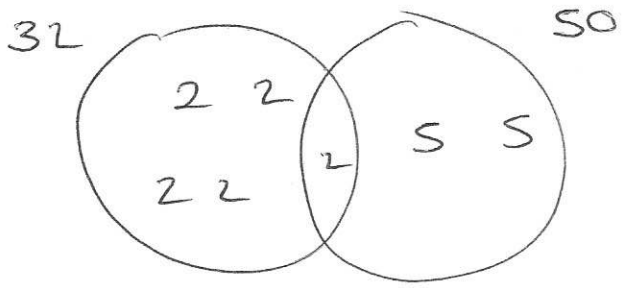
$32 = 2 \times 2 \times 2 \times 2 \times 2$

$50 = 2 \times 5 \times 5$

800

.....

(2)



12. The attendance at Frome United versus Trowbridge Rovers was 8,701.

Of this crowd, five-sevenths were male.
Calculate how many people were female. ← $\frac{2}{7}$

$8701 \div 7 = 1243$

1243×2

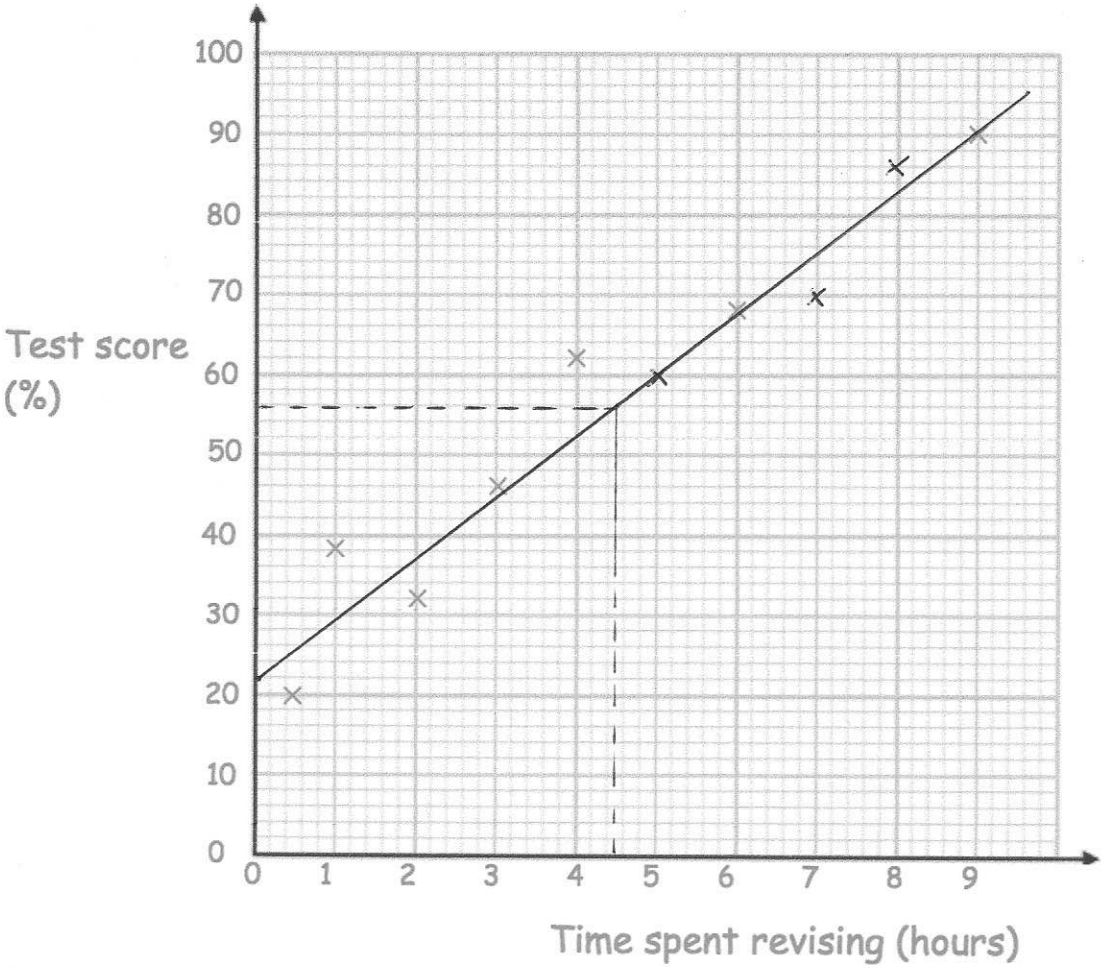
2486

(3)

13. The table shows the time spent revising and the test scores of ten students.

Time spent revising (hours)	9	0.5	1	4	6	2	3	7	5	8
Test result (%)	90	20	38	62	68	32	46	70	60	86

The first seven points have been plotted on this scatter diagram.



(a) Complete the scatter diagram.

(1)

(b) Describe the relationship shown in the scatter diagram.

As the time spent revising increases, so does the test score

(1)

(c) Draw a line of best fit on your scatter diagram.

(1)

(d) Another student has spent 4.5 hours revising.
Use your line of best fit to estimate their test result.

56 %

(1)

14 . The pictogram shows the amount of money raised by students in some tutor groups at a school.

Key ○ = £10

Tutor group		Raised
S	○○○○○○	£60
T	○○○	£30
E	○○○○◑	£45
P	○○○◑	£35

(a) Complete the raised column.

(2)

(b) Complete the pictogram for tutor group E.

(2)

(c) How much money was raised altogether?

60 + 30 + 45 + 35

£ 170

(1)

15. The weight of a 2p coin is 7g.

Find the weight of £6 worth of 2p coins.
Give your answer in kilograms.

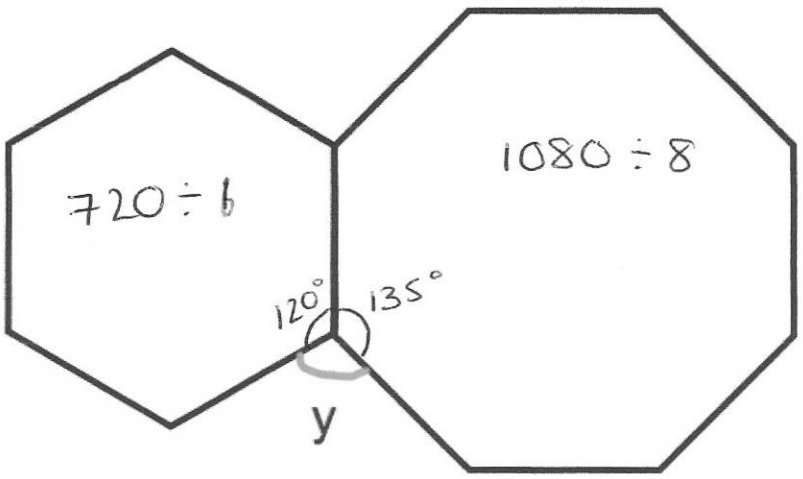
600 ÷ 2 = 300

300 × 7 = 2100

2.1 .....kilograms

(4)

16. Shown is a regular hexagon and a regular octagon.

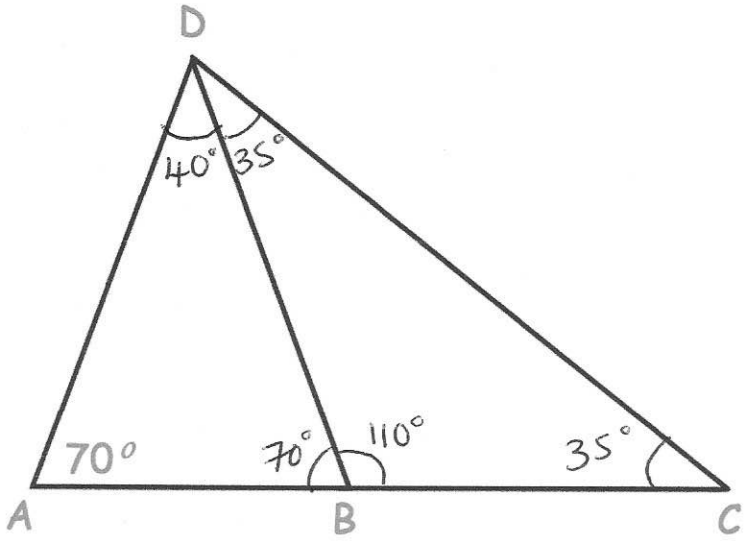


Calculate the size of angle y.

y = 105 °

(3)

17.



Triangles ABD and BCD are both isosceles.
AC is a straight line.

Is ADC a right angle? No
Clearly explain your answer.

$\angle ABD = 70°$ (isosceles triangle - 2 angles equal)

$\angle ADB = 40°$ (angles in triangle add to 180°)

$\angle CBD = 110°$ (angles in straight line add up to 180°)

$\angle BDC = 35°$ (2 angles in an isosceles triangle are equal)

(4)

$\angle ADC = 75°$ not 90°

18. Timothy asked 30 people how long it takes them to get to school.

The table shows some information about his results.

Time (t minutes)	Frequency	midpoint	fx
$0 < t \leq 10$	2	5	10
$10 < t \leq 20$	8	15	120
$20 < t \leq 30$	12	25	300
$30 < t \leq 40$	7	35	245
$40 < t \leq 50$	1	45	45
	30		720

Work out an estimate for the mean time taken.

$720 \div 30$

24 minutes

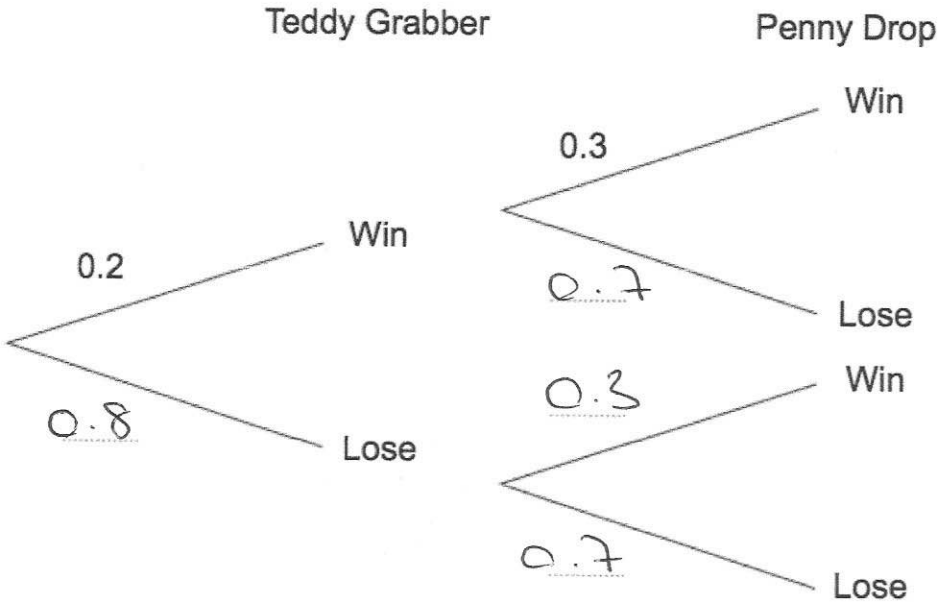
(4)

19 . James goes to an arcade.

He has one go on the Teddy Grabber.
He has one go on the Penny Drop.

The probability that he wins on the Teddy Grabber is 0.2.
The probability that he wins on the Penny Drop is 0.3.

(a) Complete the tree diagram.



(2)

(b) Work out the probability that James wins on the Teddy Grabber and he also wins on the Penny Drop.

0.2×0.3

0.06

(2)

20. Sophie went to Spain.
She changed £225 into euros (€).

The exchange rate was £1 = €1.62

(a) Change £225 into euros (€).

225×1.62

€ 364.50

(2)

On her return to England, Sophie changed €66 into pounds (£)

The new exchange rate was £1 = €1.50

(b) Change €66 into pounds (£).

$66 \div 1.5$

£ 44

(2)

21. Lauren is given a 12% pay rise.
Her new salary is £24,080

What was Lauren's salary before the pay rise?

$112\% = 24080$

$1\% = 215$

£ 21500

(3)

22. Expand and simplify $(w - 3)(w - 8)$

$w^2 - 11w + 24$

(2)

13. Work out the *n*th term for this sequence

8 17 26 35 44 ... ...

9n 9 18 27

9n - 1

(2)

24. Factorise

$15y + 20$

$5(3y+4)$

(2)

25. Factorise $x^2 + 2x - 24$

$(x+6)(x-4)$

(2)

16. Solve the inequality $5x + 11 \geq 2$

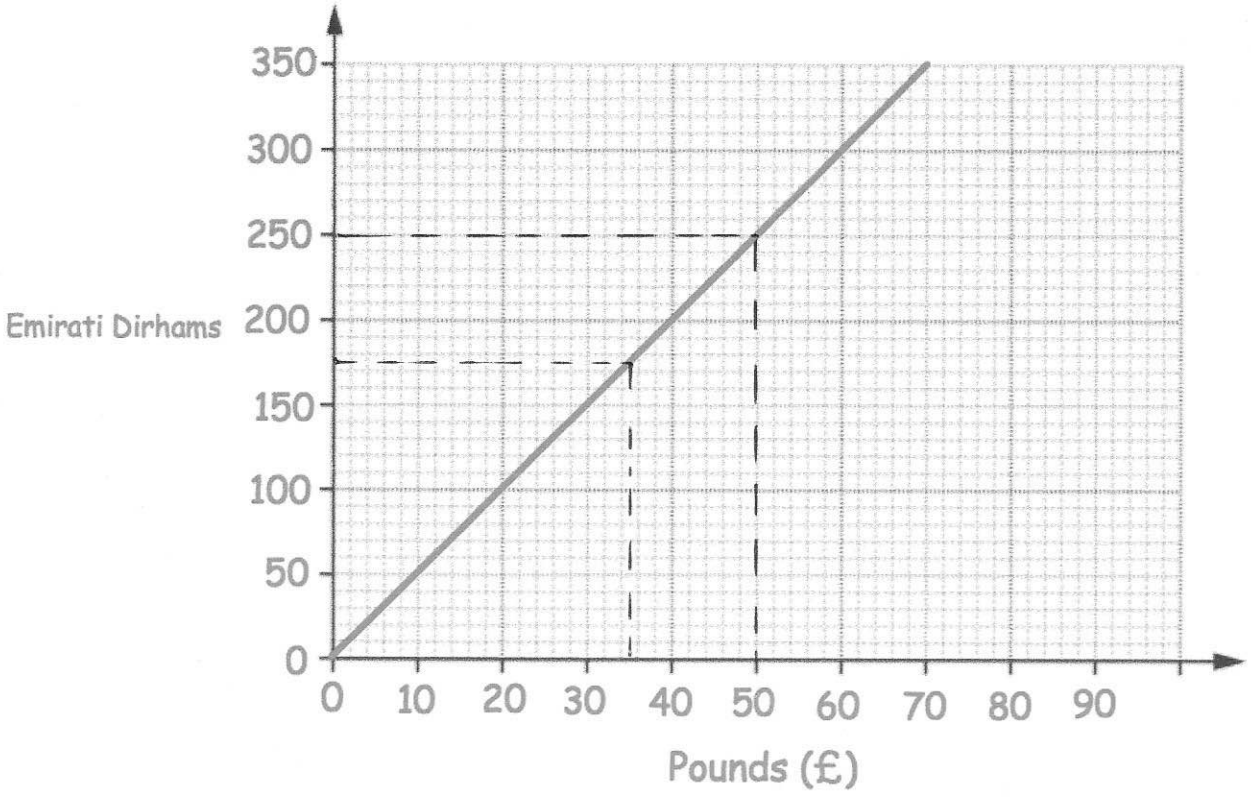
$5x \geq -9$

$x \geq -1.8$

$x \geq -1.8$

(2)

17.



(a) Convert £50 into Dirhams.

250 Dirhams

(1)

(b) Convert 175 Dirhams into Pounds (£).

£ 35

(1)

Tom wants to buy a camera.
In London the camera costs £380.
In Abu Dhabi the camera costs 2000 Dirhams.

In which city is the camera cheaper and by how much?
Give your answer in pounds.

200 Dirhams = £40

2000 Dirhams = £400

City: London £ 20

(1)

28. Factorise $x^2 - 64$

$(x+8)(x-8)$

(2)

29. A radioactive substance decays over time.
Every year its mass decreases by 14%.

How many years will it take for 500kg of the substance to decay to a mass less than 200kg?

500×0.86^{t}

$t = 5$ 235.21kg

$t = 6$ 202.28kg

$t = 7$ 173.96kg

7 .....years
(3)

30. Mr Holland has 2500kg of rice.

(a) Write 2500 kg in grams.
Give your answer in standard form.

2,500,000

2.5×10^6 ..... g

(2)

(b) One grain of rice weighs 0.03g
Write the weight of one grain of rice in standard form.

3×10^{-2} ..... g

(1)

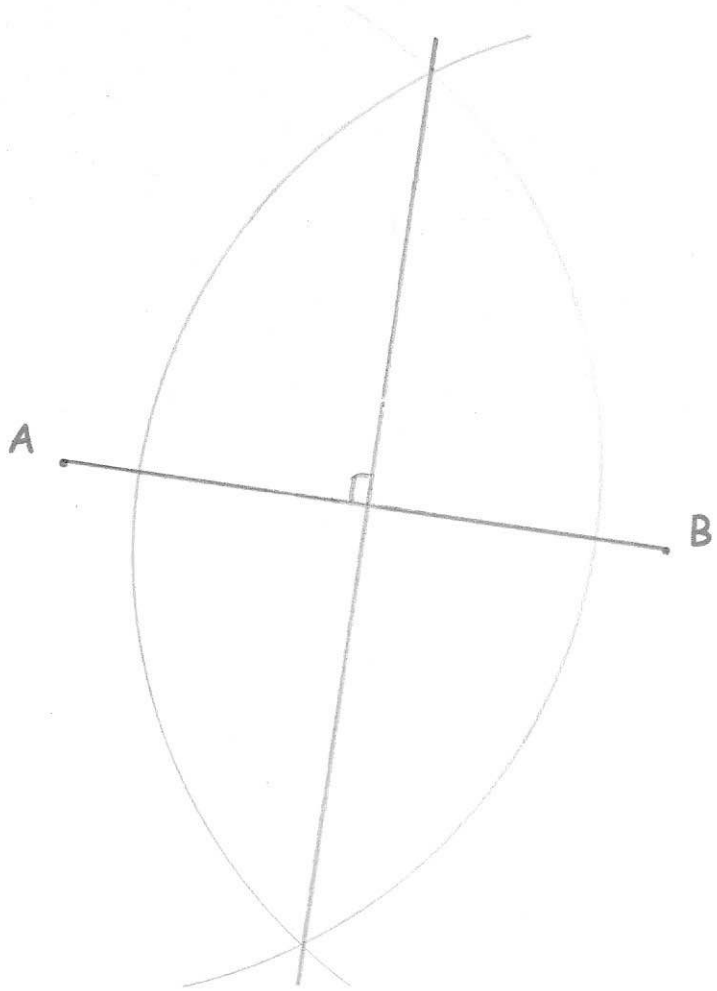
(c) How many grains of rice are there in 2500kg of rice?
Give your answer in standard form.

$(2.5 \times 10^6) \div (3 \times 10^{-2})$

8.33×10^7

(2)

31. Use ruler and compasses to construct the perpendicular bisector of AB.
You **must** show clearly all your construction arcs.

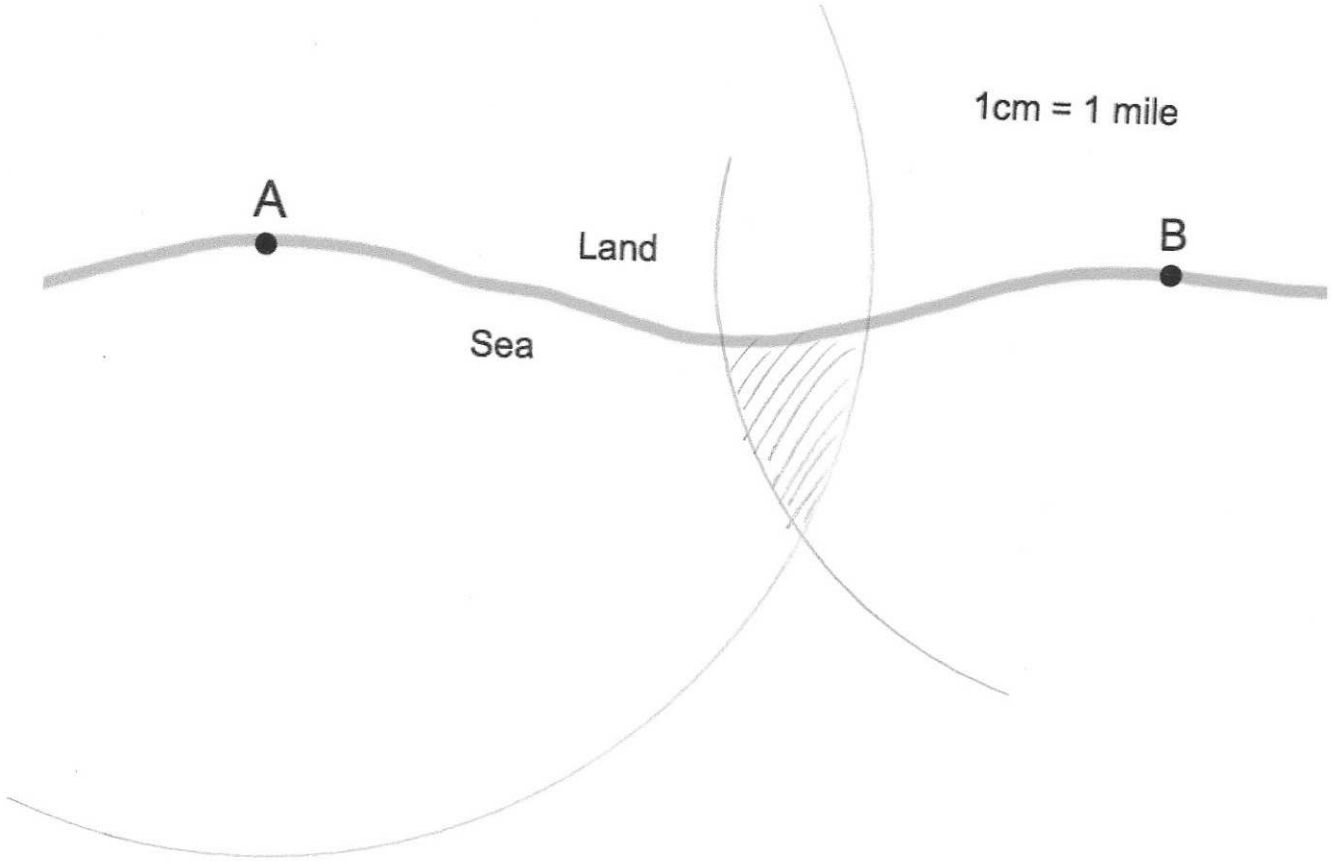


(2)

32. The diagram shows two lighthouses.

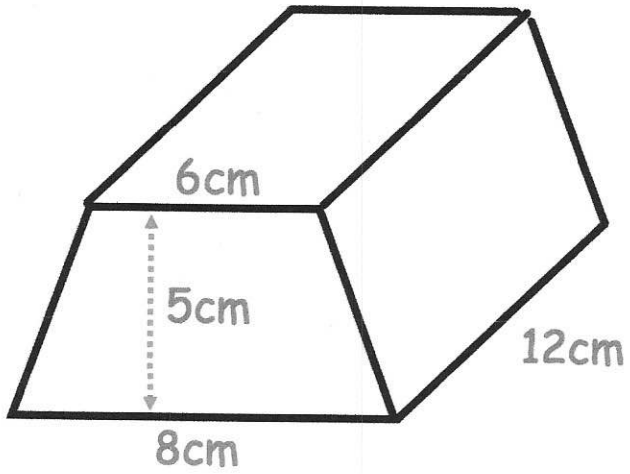
A boat is within than 8 miles of lighthouse A.
The same boat is within 6 miles of lighthouse B.

Shade the possible area in which the boat could be.



(2)

33 . Shown below is a trapezoid prism.



Find the volume of the prism.

$A = \frac{1}{2}(6+8) \times 5$

$= \frac{1}{2}(14) \times 5$

$= 35 cm^2$

$V = 35 \times 12$

420 .....cm³

(4)