

Edexcel Paper 3H Practice Booklet

23 practice questions based on the advance information

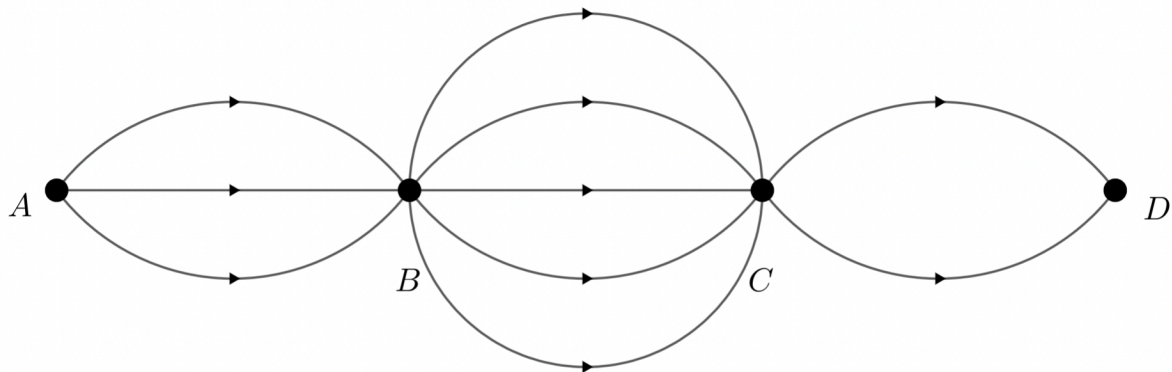
Copies of this booklet, as well as hints & solutions, are available at bossmaths.com/advanceinfo

Question 1

Given that $\frac{(x-3)^5}{x^{-7}} \times \frac{x^{-\frac{1}{2}}}{x} \equiv x^m$, find the value of m .

Question 2

This diagram shows that there are three possible paths from A to B, five paths from B to C, and two paths from C to D. The arrowheads on each path show the direction of travel allowed on each path.



Assuming it is only possible to travel along each path in the direction of D , how many different routes are there from A to D ?

Question 3

$p = 0.30$ correct to 2 decimal places

$q = 1.2$ correct to 1 decimal place

Work out the upper bound for $q - p$

Question 4

(a) Factorise $16x^2 - 9$

(b) Expand and simplify $t(7t - 4) - 5(7t - 4) + t(4 - 7t) + 3(7t - 4)$

Question 5

Roberto is x years old.

Diogo is 5 years younger than Roberto.

Mohamed is 4 years older than Diogo.

- (a) Write an expression, in terms of x , for the sum of the ages, in years, of Roberto, Diogo, and Mohamed.

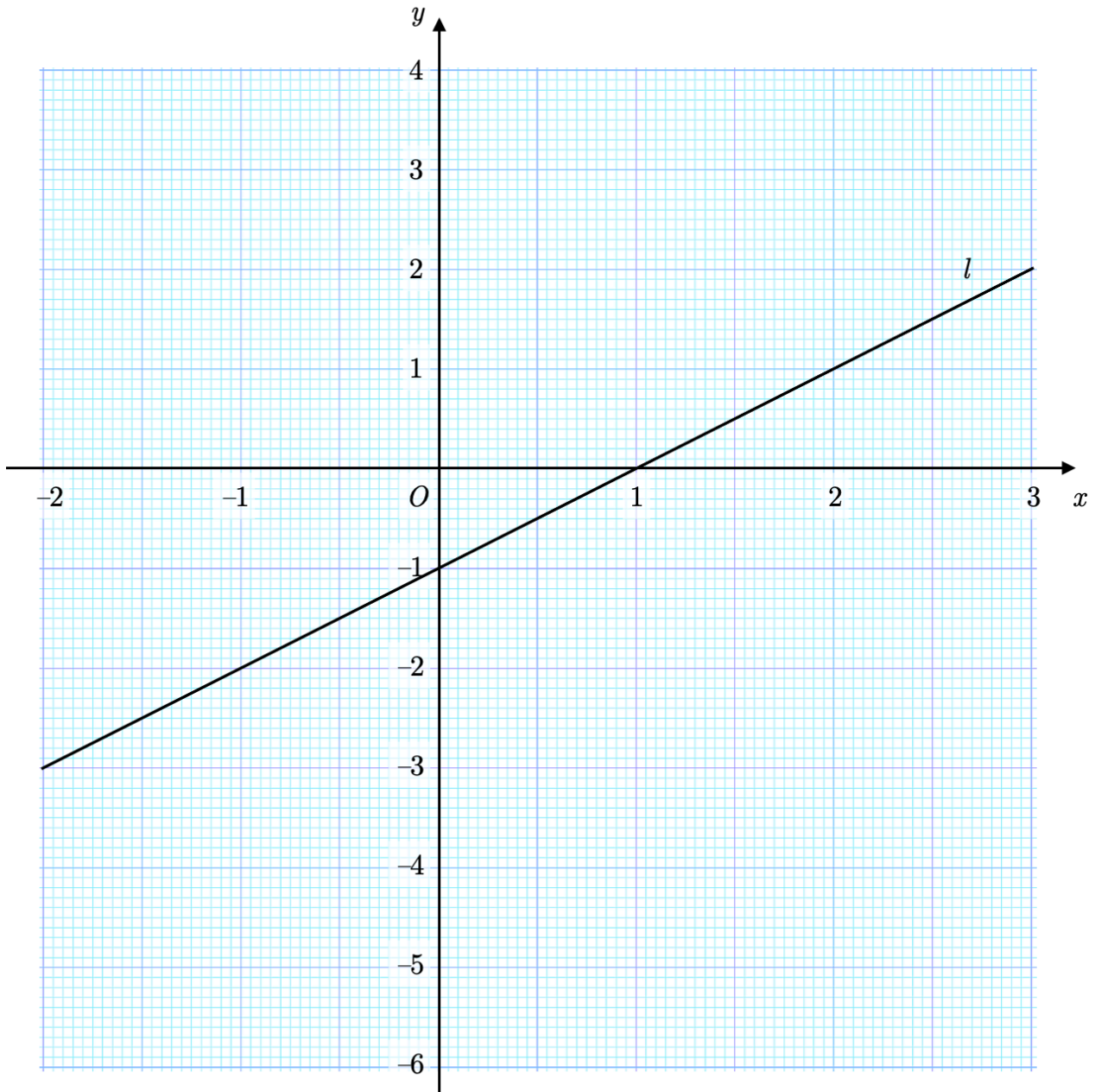
Moacir is 54 years older than Roberto.

Moacir's age is equal to the sum of the ages of Roberto, Diogo, and Mohamed.

- (b) Find Diogo's age.

Question 6

Work out the gradient of line l , shown below.



Question 7

The value of some machinery decreases by a fixed 4.5% every year.
Ten years after its construction, the machinery had a value of £820.31.

What was the value of the machinery 7 years after its construction?

£.....

Question 8

Visitors to an office need to record their time of arrival and their time of leaving on a sign-in sheet.

One visitor signs in at 8.34 am and records their time of leaving as 1520 later that day.

How long did this visitor spend at the office? Write your answer in minutes.

..... minutes

Question 9

Amy and Bob would like to share some money in the ratio $5 : 3$ so that Amy gets £120 more than Bob.

(a) How much money should they each receive?

(b) Rewrite the ratio $4 : 3 : 5$ in the form $1 : m : n$

Question 10

y is directly proportional to \sqrt{x} .

When $x = 45$, $y = 15$.

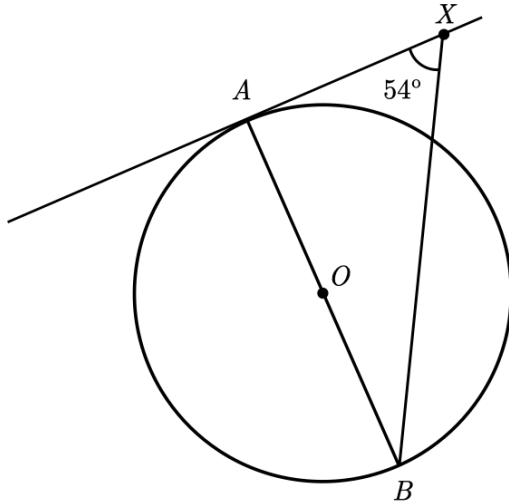
Find the value of y when $x = 80$.

Question 11

The diagram shows a circle with centre O , a tangent to the circle at point A , point X on the tangent, diameter AB , and a line segment BX .

Angle $AXB = 54^\circ$

BX intersects the circle at two points: B and C .



- Label the point C on the diagram.
- Work out the size of angle BAC . Give reasons for your answer

Question 12

At the start of an experiment, the mass of the bacteria in a petri dish is 1.35 g.

The mass of the bacteria increases by 5.8% every hour.

A scientist notes the mass of the bacteria every hour.

After n hours, the scientist recorded a mass of 2.00 grams.

Find the value of n .

Question 13

Simplify fully $\frac{6(x+5)}{8(x+5)^3}$

Question 14

Work out $\begin{pmatrix} 5 \\ 7 \end{pmatrix} + \begin{pmatrix} 3 \\ 14 \end{pmatrix}$

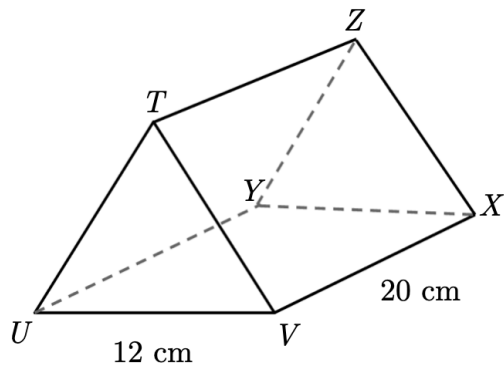
Question 15

Sarah travels 120 miles from London to Leicester at an average speed of 40 mph.
She later travels 120 miles from Leicester to York at an average speed of 60 mph.

Calculate Sarah's average speed for her journey from London to York.

Question 16

The diagram shows a triangular prism.
The triangular faces of this prism are equilateral triangles.



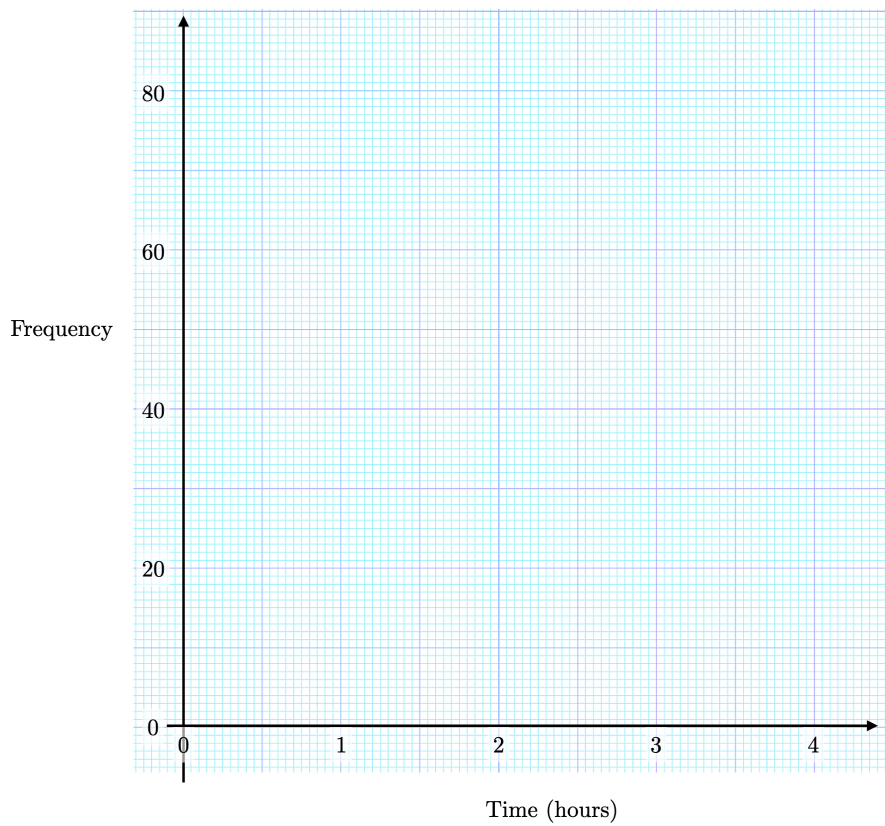
Calculate the angle between TX and the plane $UVXY$.

Question 17

This frequency table shows information about the waiting times for 300 patients at a hospital's Accident & Emergency department.

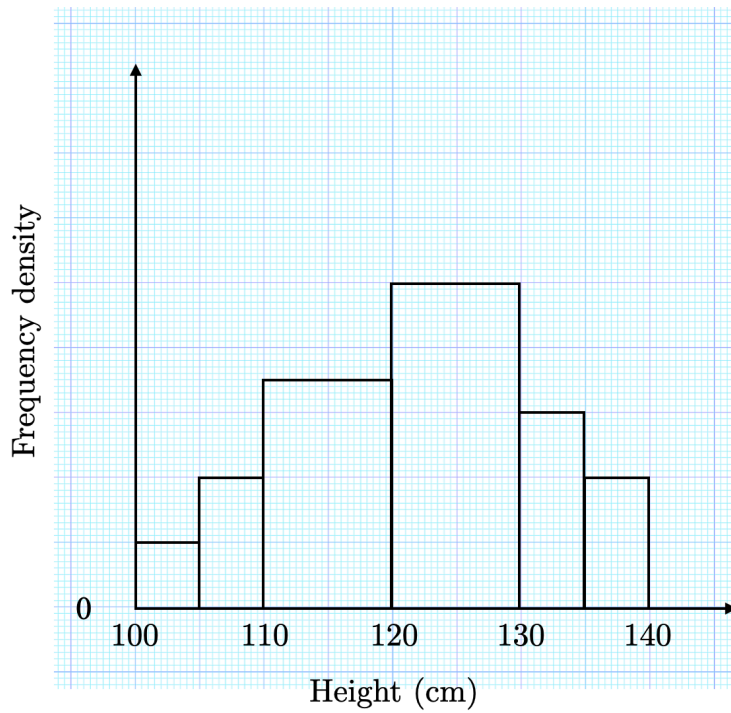
Time (minutes)	Frequency
$0 < t \leq 30$	55
$30 < t \leq 60$	82
$60 < t \leq 90$	46
$90 < t \leq 120$	30
$120 < t \leq 150$	15
$150 < t \leq 180$	20
$180 < t \leq 210$	27
$210 < t \leq 240$	25

Draw a frequency polygon to show this information.



Question 18

This histogram shows information about the heights of a number of children.



The number of children are taller than 135 cm is seven greater than the number of children that are at most 105 cm tall.

How many children are more than 120 cm tall?

Question 19

Solve algebraically the simultaneously equations

$$-6x + 3y = 24$$

$$y = x^2 - 7x + 8$$

Question 20

(a) Make p the subject of the formula $m = \frac{8(q + 3p)}{p}$

(b) Work out the value of p when $q = 0.34$ and $m = 0.7$

Question 21

A box contains 7 lemon sweets and 4 orange sweets. Anne picks two sweets at random from the box. Find the probability that the two sweets are the same flavour.

Question 22

The diagram shows two right-angled triangles.

AB has length 12 cm and AD has length 5 cm. CD has length x cm.

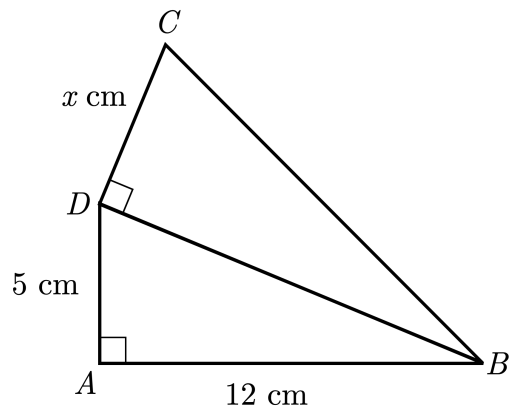


DIAGRAM NOT DRAWN ACCURATELY

Given that the two triangles are similar, find the two possible values of x .

Question 23

The diagram shows a trapezium $ABCD$ and one of its diagonals, BD .

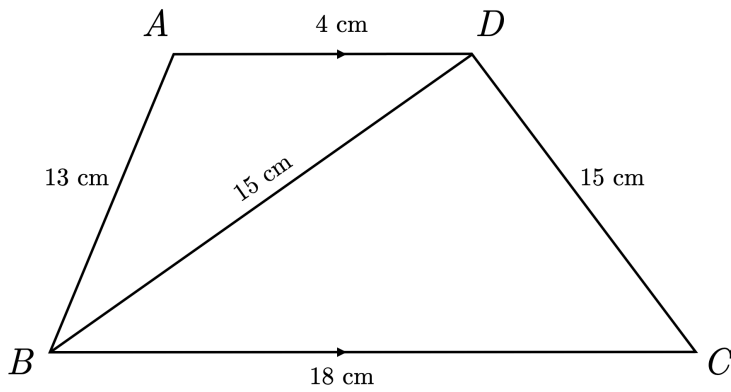


DIAGRAM NOT DRAWN ACCURATELY

Find the area of this trapezium.