

General Mathematics - Practice Examination A

Please note ... the format of this practice examination is different from the current format. The paper timings are different and calculators can be used throughout.

MATHEMATICS **Standard Grade - General Level**

Time allowed - 1 hours 30 minutes

First name and initials

Surname

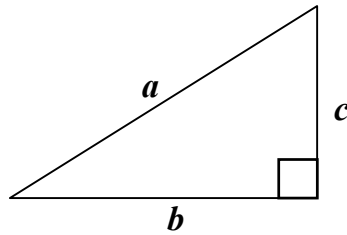
Read Carefully

1. Answer as many questions as you can.
2. Write your answers in the spaces provided .
3. Full credit will be given only where the solution contains appropriate working.
4. You may use a calculator

FORMULAE LIST

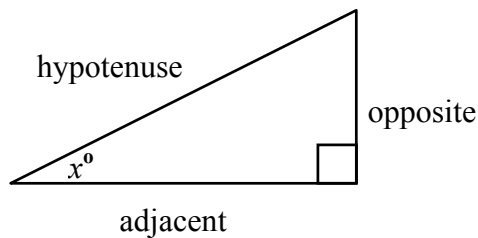
Circumference of a circle:	$C = \pi d$
Area of a circle:	$A = \pi r^2$
Curved surface area of a cylinder:	$A = 2\pi r h$
Volume of a cylinder:	$V = \pi r^2 h$
Volume of a triangular prism:	$V = Ah$

Theorem of Pythagoras:



$$a^2 = b^2 + c^2$$

Trigonometrical ratios
in a right angled
triangle:

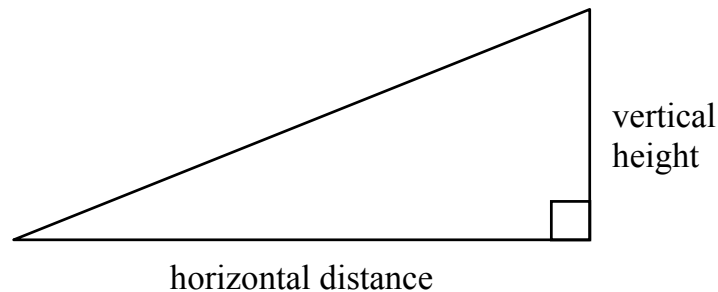


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$

Gradient:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

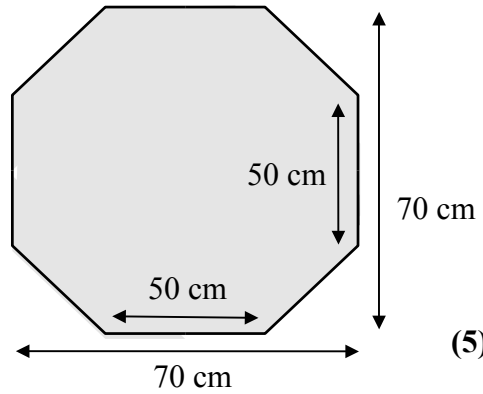
12. Tony has made a small coffee table in his woodwork class, by cutting the corners off a 70 cm square piece of wood .

The top of the table is shown.

He wants to complete the table by putting A finishing strip round the outside edge.

What length of strip will he need ?

Give your answer correct to 1 - decimal place.



(5)

13. Karen is buying a new TV & video. She has seen it advertised in two stores in the town for a cash price of £750. Both stores offer payment terms.

Electro-city

TV & Video Package £750

or

10% deposit and 12 payments of £58

TownTV

TV & VIDEO ~ £750

Or

Deposit of £50 and 18 payments of £40

Which firm is cheaper and by how much ?

(7)

KU	RA

1. $3x + 2 = 18 - x$
 For $3x + x = 18 - 2$ (1)
 For $4x = 16$ (1)
 For $x = 4$ (1)

[3 marks KU]

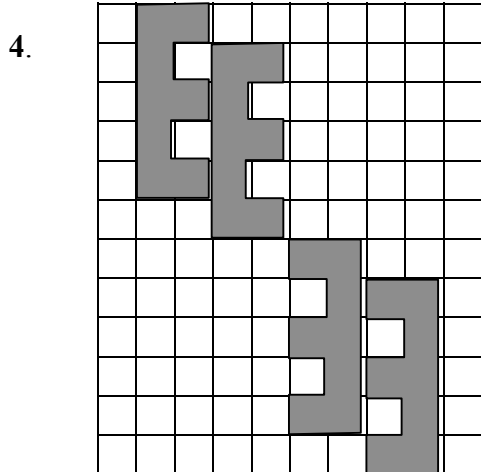
2. $4.6 \times 106 = 4 \overbrace{800\ 000}^{\quad}$ (1)
(1)

[2 marks KU]

3.

Crisps	Chump	Drink
1	4	1
2	5	0
4	0	0
0	10	0
0	3	2

..... (1) each row [4 marks RA]



..... (2) each shape [4 marks RA]

5. $3(4x + 3) - 7x$
 $= 12x$ (1)
 $+ 9 - 7x$ (1)
 $= 5x + 9$ (1)

[3 marks KU]

6. For $\angle ABD = 90^\circ$ (tangent)(1)
 For $\angle ADB = 180^\circ - (90+27)^\circ = 63^\circ$ (1)
 For $\angle x = 180^\circ - 63^\circ = 117^\circ$ (1)

[3 marks KU]

7. (a) For mean = $\frac{1596000}{7}$ (1)

= 228000(1)

[2 marks KU]

(b) For dividing by 24 i.e. $227760 \div 24 = 9490$ (1)

For dividing by 365 $9490 \div 365 = 26$ years (1)

[2 marks RA]

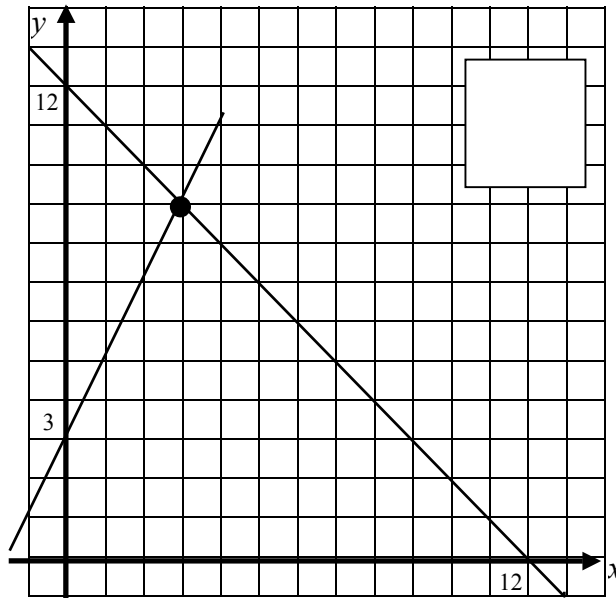
8. For calculating 1 years interest = £105 (1)

For calculating 6 months interest = $£105 \div 2$
= £52.50 (1)

For calculating total = $£1500 + £52.50$
= £1552.50 (1)

[3 marks KU]

9. (a)



For point of intersection = (3, 9) (1) [5 marks KU]

(b) For suggesting - different speeds, times, planes,
or other suitable reason

..... (1) [1 mark RA]

10. (a) For substituting into formula $C = 30 + 27 + (18 \times 2)$ (1)

For answer = £93(1)

[2 marks KU]

(b) For $97 = 30 + 58 + 18t$ (1)

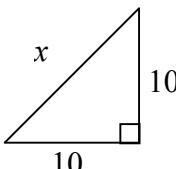
For $18t = 9$ (1)

For $t = \frac{1}{2}$ hr (1)

[3 marks RA]

11. For $k = \frac{5}{4} = 1.5$ (1)
 For $k^2 = 1.5^2 = 2.25$ (1)
 For Area = $2 \cdot 25 \times 2 \cdot 16$ (1)
 = 4.86 cm^2 (1)

[4 marks KU]

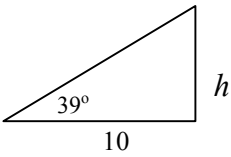
12.  For diagram (1)
 For using Pythagoras (1)
 $x^2 = 10^2 + 10^2$ (1)
 = 200 (1)
 $x = 14.14$ (1)

Perimeter = $(4 \times 14.14) + (4 \times 50)$
 = 256.56 cm(1) [5 marks RA]

13. *Electro-city*
 Deposit = 10% of £750 = £75 (1)
 Payments = $12 \times £58 = £696$ (1)
Total = £75 + £696 = **£771** (1)

- TownTV*
 Deposit = £50
 Payments = $18 \times £40 = £720$ (1)
Total = £50 + £720 = **£770** (1)

TownTV cheaper by £1 (2) [7 marks KU]

14.  $\tan 39^\circ = \frac{h}{10}$ (1)
 $h = 10 \tan 39^\circ$ (1)
 = 8.1 (1)

Yes it can be cut safely, since $8.1 < 10$ (1) [4 marks RA]

15. (a) For $C \propto s^2$
 or $C = ks^2$ (1)
 $35 = 2500k$ (1)
 $k = 0.014$ (1)
 $C = 0.014 s^2$ (1)

[4 marks KU]

- (b) $C = 0.014 s^2$
 $= 0.014 \times 900$ (1)
 $= \text{£}12.60$ (1)

[2 marks KU]

16. (a)

<i>C</i>	2	3	4	5	6	7
<i>N</i>	2	4	6	8	10	12

(2)

(b) $N = 2C - 2$ (2)

(c) $N = (2 \times 12) - 2$ (1)
 $= 22$ (1)

(d) $36 = 2C - 2$ (1)
 $38 = 2C$ (1)
 $C = 19$ (1)

(e) $10\text{m} = 1000 \text{ cm}$ (1)
 No of patterns = $\frac{1000}{40} = 25$ (1)
 No of crosses = 25×2 (1)
 $= 50$ (1)

[13 marks RA]

17. Time from 9.15 – 1200 = 2h 45 m (1)

$$S = \frac{D}{T} = \frac{200}{2.75} = 72.7 \text{ (2)}$$

No. He will break the limit (1)

[4 marks RA]

(pupils may work out journey time for 70mph etc.)

Totals	KU 40	RA 40
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