

**Maths Revision
Booklet**

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Equations and Inequalities

1. Solve:

a) $3p - 2 = p + 15$

b) $5(2x + 8) = 2x - 64$

c) $8d - 11 > 3d + 44$

d) $5t - 8 \leq 2t - 21$

e) $6(h + 2) < h - 18$

f) $9b - 13 \leq 35 - 3b$

2. Rearrange to make a the subject:

a) $y = ax + 3$

b) $\frac{4a}{5} - h = t$

c) $p = \frac{3a}{7} - 17$

d) $\frac{a+x}{y} = 5$

e) $v = u + at$

f) $v^2 = u^2 + 2as$

g) $\frac{ad}{g} = h$

h) $\frac{3a}{5} = \frac{b+2}{c}$

i) $\frac{t}{a} = \frac{3}{m}$

3. Write an equation to represent the following statements:

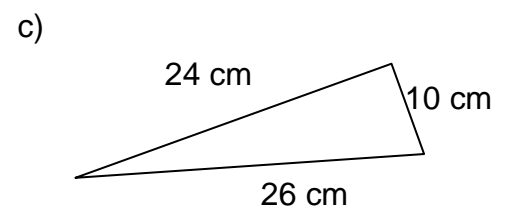
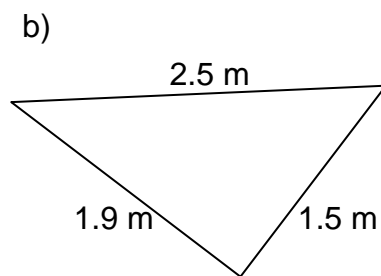
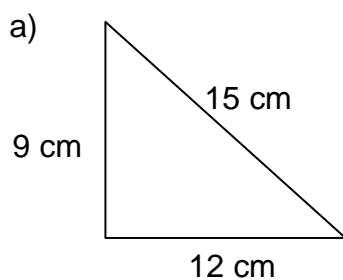
a) Monica paid £45.80 for 3 tops and one jumper.

b) The Davis family paid £120.60 for 2 adult and 3 children's tickets for the safari park.

c) 4 pencils and two rulers cost a total of £1.36.

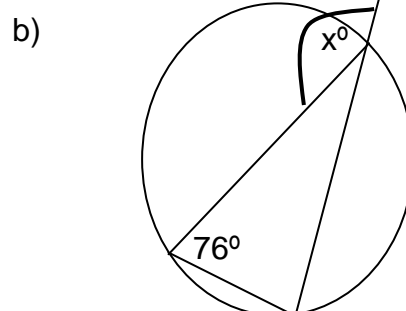
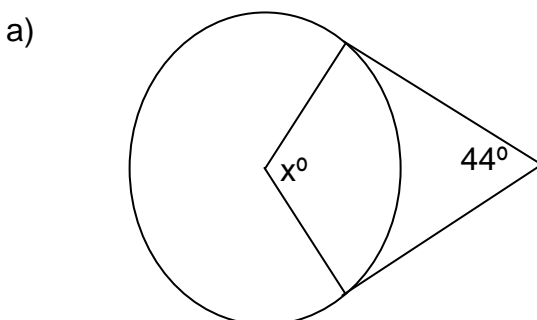
Pythagoras

4. Establish whether or not each triangle below is right angled:

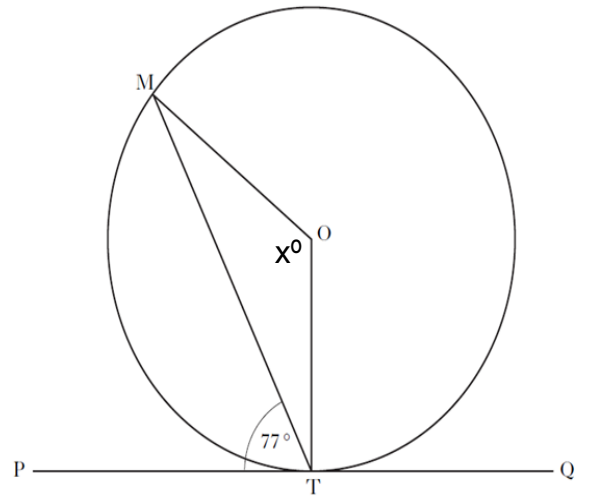
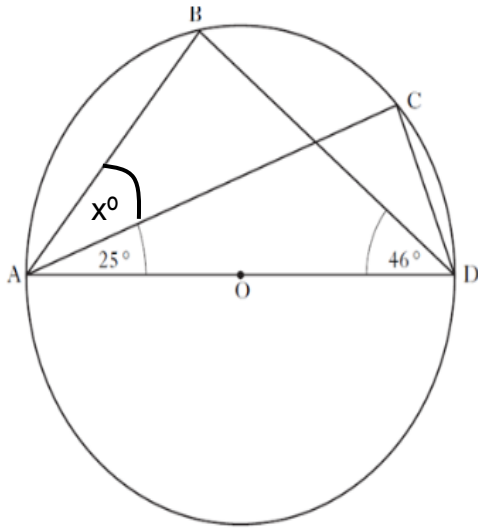


Angles in Circles and Polygons

5. Calculate the size of the missing angle, marked x .

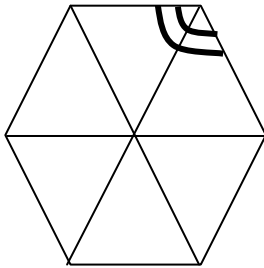


c)

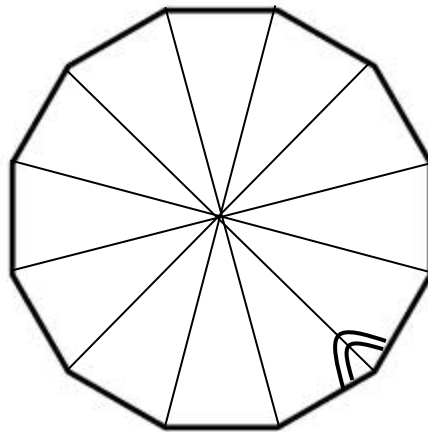


6. Calculate the angles shown on these **regular** polygons:

a)

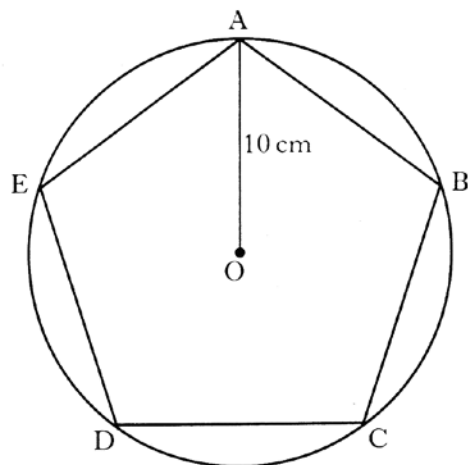


b)



Trigonometry

7.

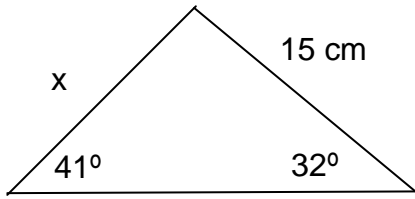


A regular pentagon ABCDE is drawn in a circle, centre O, with radius 10 centimetres.

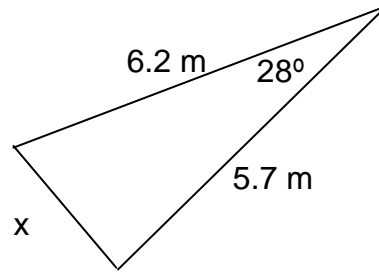
Calculate the area of the regular pentagon.

8. Find the missing side/angle in these triangles:

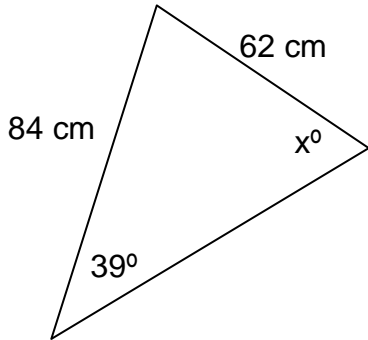
a)



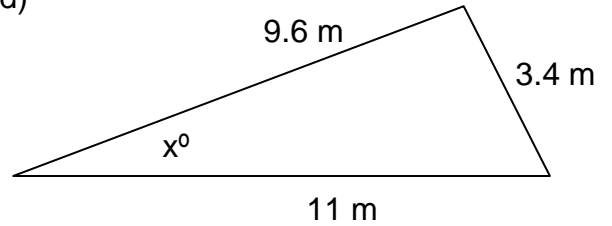
b)



c)

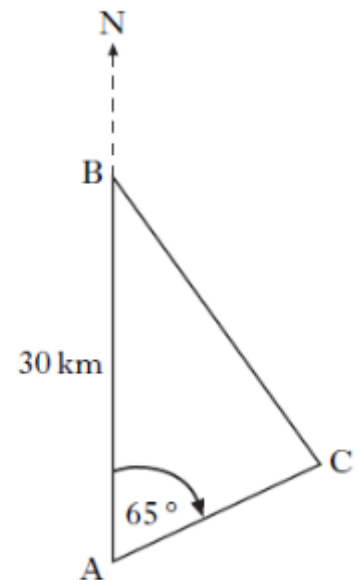


d)



9. Brunton is 30 kilometres due North of Appleton.
From Appleton, the bearing of Carlton is 065° .
From Brunton, the bearing of Carlton is 153° .

Calculate the distance between Brunton and Carlton.



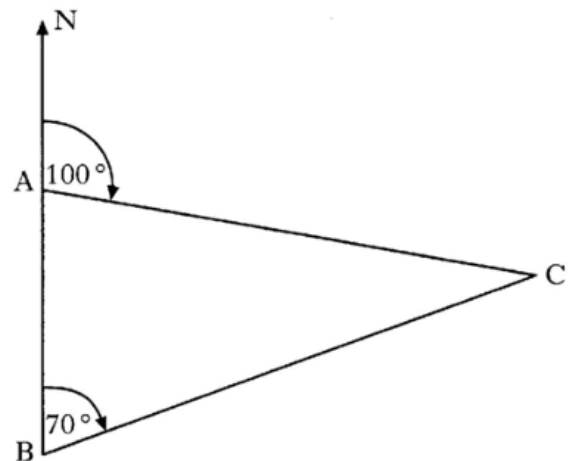
10. The diagram shows the position of three campsites, A, B and C.

Alan sets off from campsite A on a bearing of 100° at an average speed of 5.6 kmph .

At the same time, Bob sets off from campsite B on a bearing of 070° .

After 3 hours they both arrive at campsite C.

Who has the faster average speed and by how much?



Statistics

11. In a bakery, a sample of six fruit loaves is selected and the weights, in grams, are recorded.

395 400 408 390 405 402

For the above data the mean is found to be 400 grams.

- (a) Calculate the standard deviation.

Show clearly all your working.

- (b) New methods are introduced to ensure more consistent weights.

Another sample is then taken and the mean and standard deviation found to be 400 grams and 5.8 grams respectively.

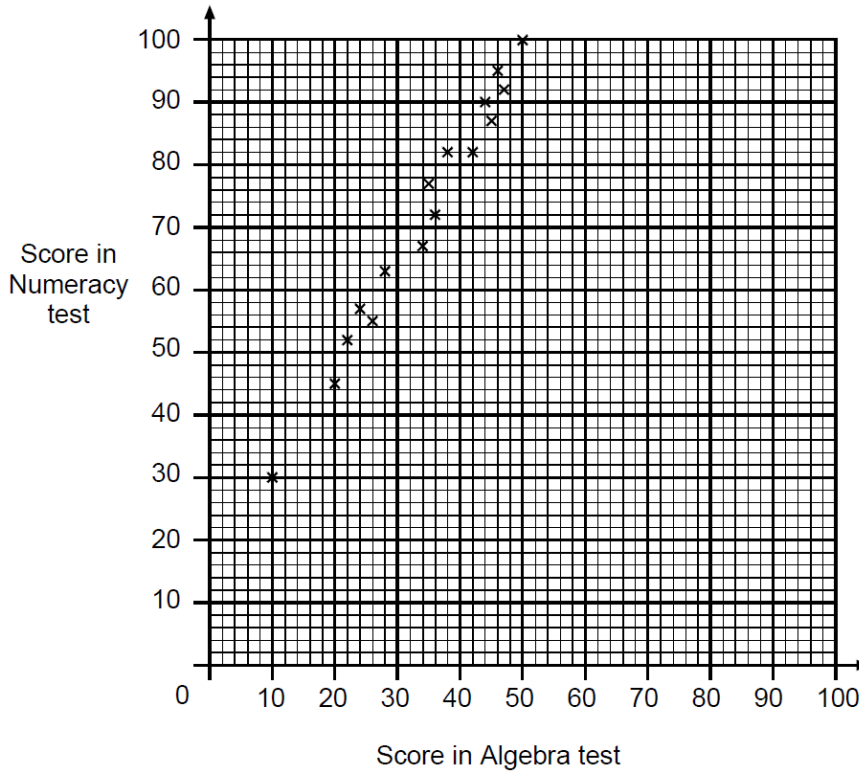
Are the new methods successful?

Give a reason for your answer.

12. The scattergraph below shows the marks scored in an Algebra test by a sample of students plotted against the marks scores in a Numeracy test.

- (a) Draw your estimate of the line of best fit on the graph.

Question 8 (a) – Diagram 4



- (b) Find the equation of your line of best fit.
- (c) Using your equation, estimate the mark in the Numeracy test by a student who scored 20 in the Algebra test.

Answers

Equations & Inequalities

1. a) $p = 8.5$ b) $x = -13$ c) $d > 11$ d) $t \leq -\frac{13}{3}$
 e) $h < -6$ f) $b \leq 4$
2. a) $a = \frac{y-3}{x}$ b) $a = \frac{5(t+h)}{4}$ c) $a = \frac{7(p+17)}{3}$ d) $a = 5y - x$
 e) $a = \frac{v-u}{t}$ f) $a = \frac{v^2-u^2}{2s}$ g) $a = \frac{hg}{d}$ h) $a = \frac{5(b+2)}{3c}$
 i) $a = \frac{mt}{3}$
3. a) $3t + J = 45.8$ b) $2a + 3c = 120.60$ c) $4p + 2r = 1.36$

Pythagoras

4. a) $a^2 + b^2 = 225$
 $c^2 = 225$
 Yes, right-angled.
- b) $a^2 + b^2 = 5.86$
 $c^2 = 6.25$
 No, not right-angled.
- c) $a^2 + b^2 = 676$
 $c^2 = 676$
 Yes, right-angled.

Angles in Circles and Polygons

5. a) $x = 136^\circ$ b) $x = 166^\circ$ c) $x = 19^\circ$ d) $x = 154^\circ$
6. a) 120° b) 150°

Trigonometry

7. Area triangle = 47.55 Area polygon = 237.8 cm²
8. a) $x = 12.12$ cm b) $x = 2.92$ m c) $x = 58.5^\circ$ d) $x = 17.3^\circ$
9. $x = 27.2$ km
10. Distance (Bob) = 17.6 km Speed (Bob) = 5.87 kmph
 Bob is faster by 0.27 kmph

Statistics

11. a) $\sum x = 2400$ $\sum x^2 = 960218$ sd = 6.6
 b) Mean is the same so on average the method works. Since standard deviation is smaller, the weights of loaves are more consistent so the new methods are successful.
12. a) Line drawn
- b) $c = (0, 12)$ Line passes through (50, 100)
 $m = 1.76$ (note: answers may vary depending on the line drawn)
 $y = 1.76x + 12$
- c) $y = 1.76x + 12 = 47.2$