Chapter 8

Trigonometry

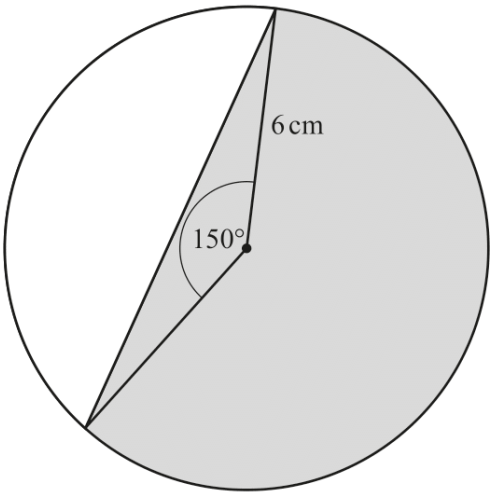
01. 0607_s22_qp_22 Q: 12

The lengths of the sides of a triangle are 3 cm, 4 cm and 5 cm.

Find the sine of the smallest angle.

..... [1]

02. 0607_w22_qp_21 Q: 14



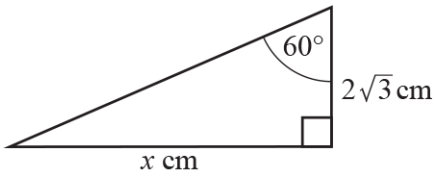
NOT TO SCALE

A sector of a circle with radius 6 cm has a sector angle of 150°.

Find the exact value of the area of the shaded region.
Give your answer in its simplest form.

..... cm^2 [4]

03. 0607_w22_qp_22 Q: 10



NOT TO SCALE

Find the value of x.

$x =$ ..... [3]

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04. 0607_s21_qp_21 Q: 10

(a) Solve.

$$\sin x = \frac{1}{2} \quad \text{for} \quad 0° \leqslant x \leqslant 90°$$

$x =$ ..... [1]

(b) Solve.

$$\sin x = -\frac{1}{2} \quad \text{for} \quad 0° \leqslant x \leqslant 360°$$

$x =$ ..... [2]

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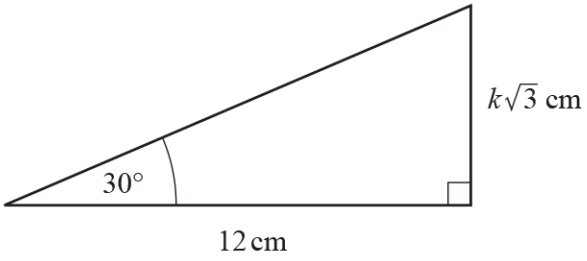
05. 0607_s21_qp_22 Q: 14



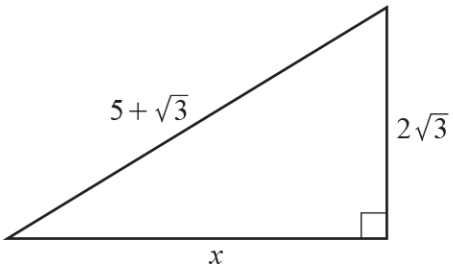
NOT TO SCALE

Find the value of k.

$k =$ ..... [3]

06. 0607_w21_qp_21 Q: 11

In this question all lengths are in centimetres.



NOT TO SCALE

Find the value of x^2.
Give your answer in the form $a+b\sqrt{3}$ where a and b are integers.

$x^2 =$ ..... [4]

07. 0607_w21_qp_22 Q: 20

$\tan x = k \qquad 0° < x < 90°$

Find, in terms of k,

(a) $\tan(180° - x)$,

..... [1]

(b) $\tan(90° - x)$.

..... [1]

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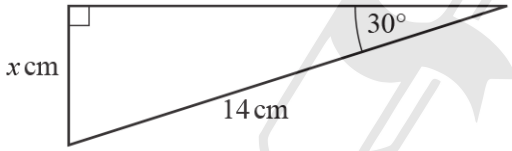
08. 0607_s20_qp_21 Q: 6



NOT TO SCALE

Work out the value of x.

$x =$ ..... [3]

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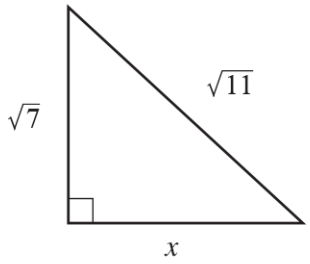
09. 0607_s20_qp_22 Q: 15



NOT TO SCALE

Find the value of x.

$x =$ ..... [2]

---

10. 0607_s20_qp_23 Q: 11

The table shows some trigonometric ratios, each correct to 3 decimal places.

	Sine	Cosine	Tangent
40°	0.643	0.766	0.839
70°	0.940	0.342	2.747

Use this information to find

(a) sin110°,

..... [1]

(b) tan320°.

..... [1]

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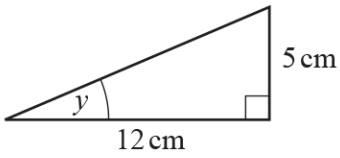
11. 0607_w20_qp_23 Q: 7

Find, as a fraction, the value of $\sin y$.



NOT TO SCALE

$\sin y =$ ..... [3]

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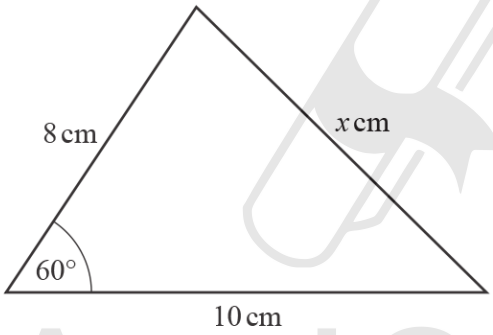
12. 0607_w20_qp_23 Q: 11



NOT TO SCALE

Find the value of x^2.

$x^2 =$ ..... [3]

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13. 0607_w20_qp_23 Q: 16

α is acute and $\tan\alpha = x$.

Find, in terms of x,

(a) $\tan(180-\alpha)$,

$\tan(180-\alpha) =$ ..... [1]

(b) $\tan(90-\alpha)$.

$\tan(90-\alpha) =$ ..... [1]

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14. 0607_w18_qp_23 Q: 12

$\sin\theta = -\frac{1}{\sqrt{2}}$ and $0° \leqslant \theta \leqslant 360°$.

Find the two values of θ.

$\theta =$ ..... or $\theta =$ ..... [2]

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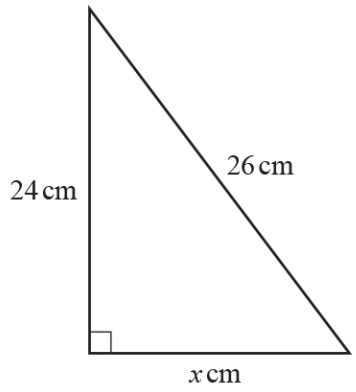
15. 0607_s17_qp_21 Q: 8



NOT TO SCALE

Find the value of x.

$x =$ ..... [3]

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16. 0607_s17_qp_21 Q: 17

Write the list of numbers in order, starting with the smallest.

$\sin 60°$ $\cos 60°$ $\tan 60°$ $\sqrt{2}$

..... < ..... < ..... < ..... [2]

smallest

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17. 0607_s17_qp_23 Q: 16

$f(x) = 6\cos(6x)$

Find the amplitude and the period of $f(x)$.

Amplitude = ...

Period = ... [2]

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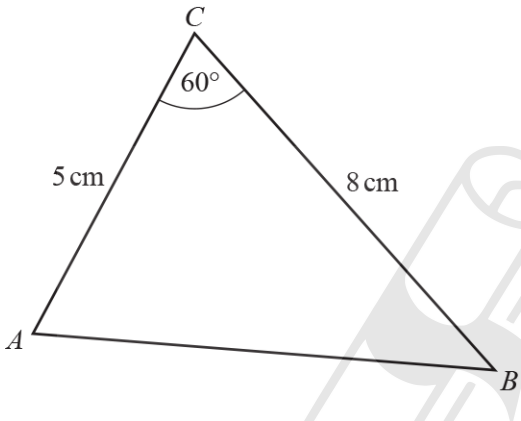
18. 0607_s17_qp_23 Q: 17



NOT TO SCALE

Find AB.

AB = ... cm [3]

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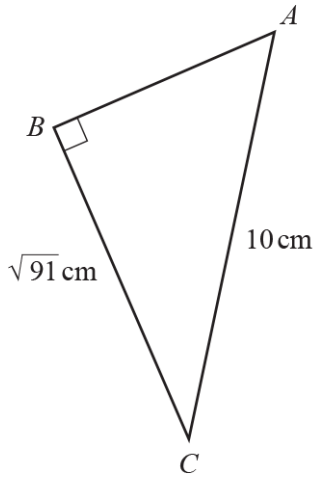
19. 0607_w17_qp_22 Q: 5



NOT TO SCALE

Work out the length of AB.

$AB =$ ..... cm [3]

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20. 0607_w17_qp_22 Q: 16

θ is an acute angle and $\tan\theta = \sqrt{3}$.

Write down the value of θ.

$\theta =$ ..... [1]

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01. 0607_s22_ms_22 Q: 12

Question	Answer	Marks	Partial Marks
	$\frac{3}{5}$ oe	1	

02. 0607_w22_ms_21 Q: 14

Question	Answer	Marks	Partial Marks
	$21\pi+9$ or $3(7\pi+3)$	4	**M1** for $0.5\times6\times6\times\sin150$ [=9] **M1** for $\frac{150}{360}\times\pi\times6^2$ [=15π] or $\frac{210}{360}\times\pi\times6^2$ [=21π] **M1** for $\pi\times6^2-\{their(\frac{150}{360}\times\pi\times6^2)-their(0.5\times6\times6\times\sin150)\}$ or $their\left(\frac{210}{360}\times\pi\times6^2\right)+0.5\times6\times6\times\sin150$

03. 0607_w22_ms_22 Q: 10

Question	Answer	Marks	Partial Marks
	6	3	**M1** for $\tan 60 = \frac{x}{2\sqrt{3}}$ **B1** for $\tan 60 = \sqrt{3}$

04. 0607_s21_ms_21 Q: 10

Question	Answer	Marks	Partial Marks
(a)	30	1	
(b)	210 330	2	**B1** for each or **B1** for both with extras in range

05. 0607_s21_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	4	3	**M1** for $\frac{k\sqrt{3}}{12}=\tan 30$ **B1** for $\tan 30 = \frac{1}{\sqrt{3}}$ soi

06. 0607_w21_ms_21 Q: 11

Question	Answer	Marks	Partial Marks
	$16 + 10\sqrt{3}$	4	**M1** for $(5 + \sqrt{3})^2 = x^2 + (2\sqrt{3})^2$ oe **B1** for $5^2 + 5\sqrt{3} + 5\sqrt{3} + (\sqrt{3})^2$ oe **B1** for 12

07. 0607_w21_ms_22 Q: 20

Question	Answer	Marks	Partial Marks
(a)	$-k$	1	
(b)	$\frac{1}{k}$	1	

08. 0607_s20_ms_21 Q: 6

Question	Answer	Marks	Partial Marks
	7	3	**M2** for $\frac{x}{14} = 0.5$ oe or **M1** for $\frac{x}{14} = \sin 30$ or **B1** for $\sin 30 = 0.5$ oe

09. 0607_s20_ms_22 Q: 15

Question	Answer	Marks	Partial Marks
	2	2	**M1** for $\sqrt{11}^2 - \sqrt{7}^2$

10. 0607_s20_ms_23 Q: 11

Question	Answer	Marks	Partial Marks
(a)	0.940	1	
(b)	–0.839	1	

11. 0607_w20_ms_23 Q: 7

Question	Answer	Marks	Partial Marks
	$\frac{5}{13}$	3	**M1** for $5^2 + 12^2$ **M1** for $\frac{5}{their 13}$ if from Pythagoras

12. 0607_w20_ms_23 Q: 11

Question	Answer	Marks	Partial Marks
	84	3	**B1** for [cos 60 =] 0.5 soi **M1** for $8^2 + 10^2 - 2 \times 8 \times 10\cos 60$

13. 0607_w20_ms_23 Q: 16

Question	Answer	Marks	Partial Marks
(a)	$-x$	1	

Question	Answer	Marks	Partial Marks
(b)	$\frac{1}{x}$	1	

14. 0607_w18_ms_23 Q: 12

Question	Answer	Marks	Partial Marks
	225, 315	2	**B1** for each If 0 scored, **M1** for 45 seen

15. 0607_s17_ms_21 Q: 8

Question	Answer	Marks	Part Marks
	10	3	**M2** for $\sqrt{26^2 - 24^2}$ or **M1** for $x^2 + 24^2 = 26^2$ or identifies 5, 12, 13 triangle

16. 0607_s17_ms_21 Q: 17

Question	Answer	Marks	Part Marks
	$\cos 60 \quad \sin 60 \quad \sqrt{2} \quad \tan 60$	2	**B1** for 3 in correct 'relative' order

17. 0607_s17_ms_23 Q: 16

Question	Answer	Marks	Part Marks
	[amplitude =] 6 [period =] 60	2	**B1** for each If 0 scored, **SC1** if answers reversed

18. 0607_s17_ms_23 Q: 17

Question	Answer	Marks	Part Marks
	7	3	**B1** for cos60 = 0.5 **M1** for $5^2 + 8^2 - 2 \times 5 \times 8 \times \cos 60$

19. 0607_w17_ms_22 Q: 5

Question	Answer	Marks	Partial Marks
	3	**3**	**M2** for $\sqrt{10^2 - 91}$ or **M1** for $AB^2 + 91 = 10^2$ or better

20. 0607_w17_ms_22 Q: 16

Question	Answer	Marks	Partial Marks
	60	**1**	