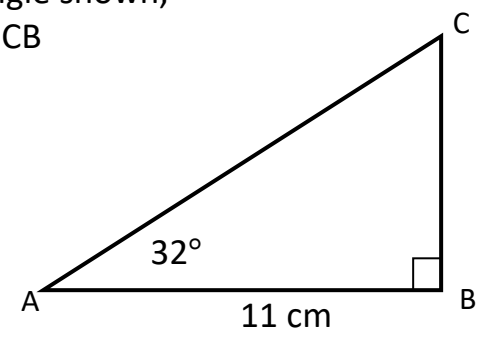
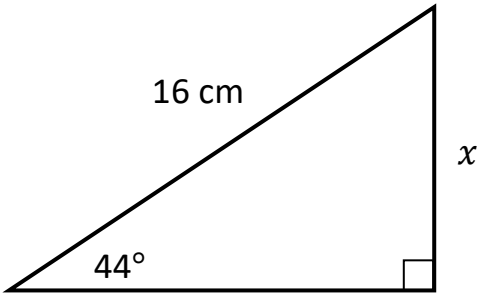
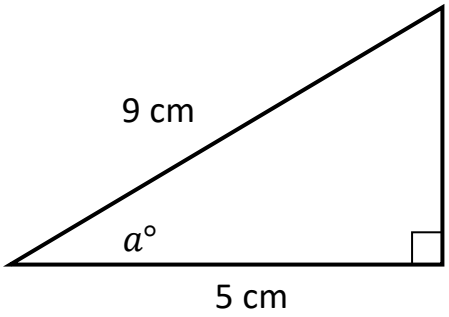
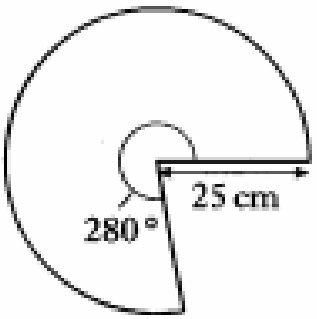
	S3 National 5 Revision – November Test 1	35
1	Simplify $\frac{\sqrt{50}}{\sqrt{2}}$	2
2	Simplify $\sqrt{3} \times \sqrt{12}$	2
3	Simplify $2a^4 \times 5a^{11}$	2
4	Simplify $(b^3)^4$	1
5	Simplify $\frac{r^7 s^2}{r^2 s^6}$ give your answer with positive indices	2
6	Calculate $(8 \times 10^5) + (1.2 \times 10^4)$. Give your answer in scientific notation	2
7	A virus has a diameter of approximately $8 \times 10^{-5} mm$. How many of these viruses would fit across the head of a pin which is $1mm$ wide.	3
8	For the right-angled triangle shown, calculate the size of side CB 	3
9	For the right-angled triangle shown, calculate the size of side x 	3

10	 For the right-angled triangle shown above calculate the size of angle a.	3
11	Expand the brackets and simplify $5(2c + 4) + 3(c - 6)$	3
12	Expand the brackets and simplify $(x + 6)(x - 2)$	2
13	Expand the brackets and simplify $(2x - 1)(x + 5) + 3x$	3
14	The diagram shows a sector of a circle with a radius of 25 cm and a centre angle of $280°$ Find the area of this sector 	3

	Answers to November Test 1	35
1	$\frac{\sqrt{50}}{\sqrt{2}} = \sqrt{\frac{50}{2}} = \sqrt{25} = 5$ or $\frac{\sqrt{50}}{\sqrt{2}} = \frac{\sqrt{25}\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{\sqrt{2}} = \mathbf{5}$	2
2	$\sqrt{3} \times \sqrt{12} = \sqrt{36} = \mathbf{6}$ or $\sqrt{3} \times \sqrt{4}\sqrt{3} = \sqrt{3} \times 2\sqrt{3} = 2 \times 3 = \mathbf{6}$	2
3	$2a^4 \times 5a^{11} = 10a^{4+11} = \mathbf{10a^{15}}$	2
4	$(b^3)^4 = b^{3\times4} = b^{12}$ or $b^3 \times b^3 \times b^3 \times b^3 = \mathbf{b^{12}}$	1
5	$\frac{r^7s^2}{r^2s^6} = r^{7-2}s^{2-6} = r^5s^{-4} = \mathbf{\frac{r^5}{s^4}}$	2
6	$(8 \times 10^5) + (1.2 \times 10^4) = 812000 = \mathbf{8.12 \times 10^5}$	2
7	$1 \div (8 \times 10^{-5}) = 12500 = \mathbf{1.25 \times 10^4}$	3
8	Using $\tan x = \frac{O}{A}$, $\tan 32 = \frac{CB}{11}$, $CB = 11 \times \tan 32 = \mathbf{6.87\ cm}$	3
9	Using $\sin x = \frac{O}{H}$, $\sin 44 = \frac{x}{16}$, $x = 16 \times \sin 44 = \mathbf{11.11\ cm}$	3
10	Using $\cos x = \frac{A}{H}$, $\cos x = \frac{5}{9}$, $x = \cos^{-1}\left(\frac{5}{9}\right) = \mathbf{56°}$	3
11	$5(2c + 4) + 3(c - 6) = 10c + 20 + 3c - 18 = \mathbf{13c + 2}$	3
12	$(x + 6)(x - 2) = x^2 - 2x + 6x - 12 = \mathbf{x^2 + 4x - 12}$	2
13	$(2x - 1)(x + 5) + 3x$ $= 2x^2 + 10x - x - 5 + 3x$ $= \mathbf{2x^2 + 12x - 5}$	3
14	$Area = \frac{280}{360} \times \boldsymbol{\pi} \times 25^2 = 1527.163 = \mathbf{1527\ cm^2}$ $Area = \frac{280}{360} \times \mathbf{3.14} \times 25^2 = 1526.3888.. = \mathbf{1526\ cm^2}$	3