N5 Number exam review

1 Evaluate the following.
Give your answers as fractions.

a 2^{-3}

....

(1)

b $\left(\dfrac{27}{343}\right)^{\frac{1}{3}}$

....

(1)

c $\left(\sqrt{\dfrac{3}{8}}\right)^4$

....

(1)

(Total 3 marks)

2 a Express $\sqrt{2} + \sqrt{8}$ in the form $a\sqrt{2}$, where a is an integer.

....

(1)

b Express $\left(\dfrac{1}{\sqrt{2}}\right)^9$ in the form $\dfrac{\sqrt{b}}{c}$, where b and c are integers.

....

(3)

(Total 4 marks)

3 a Simplify, leaving your answer in index form

i $2^4 \times 2^3$

....

ii $3^8 \div 3^2$

....

(2)

b $5^x = 1$

Find the value of x.

$x =$ ....

(2)

(Total 3 marks)

4 a Express $8^{\frac{1}{2}}$ as a power of 2

....

(2)

b Express $\sqrt{3}$ as a power of 9

....

(2)

c Express $\dfrac{1}{4\sqrt{2}}$ as a power of 2

....

(3)

(Total 7 marks)

5 $\left(1 + 3\sqrt{5}\right)^2 = p + q\sqrt{5}$ where p and q are integers.

Find the value of p and the value of q.

$p =$ ....

$q =$ ....

(Total 2 marks)

6 a Work out

i 8^0

....

ii 5^{-2}

....

iii $27^{-\frac{1}{3}}$

....

iv $25^{\frac{1}{2}}$

....

(4)

b Given that $x = 2^k$ and $\sqrt{\dfrac{4}{x}} = 2^c$, find c in terms of k.

$c =$ ....

(1)

(Total 5 marks)

7 Work out

$$\frac{\left(3-\sqrt{2}\right)\left(2+3\sqrt{2}\right)}{\sqrt{8}}$$

Give your answer in its simplest form.

....

(Total 3 marks)

8 a Find the value of $16^{\frac{1}{2}}$

....

(1)

b Given that $\sqrt{40} = k\sqrt{10}$, find the value of k.

....

(1)

Diagram **NOT** accurately drawn
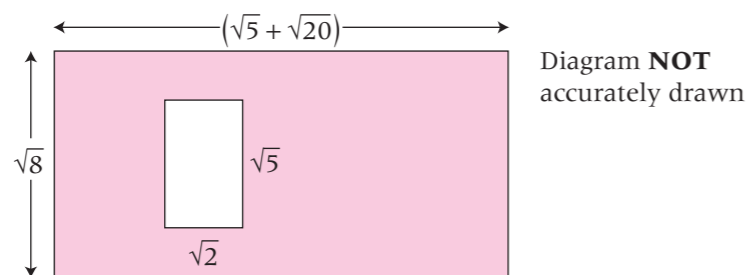
A large rectangular piece of card is $\left(\sqrt{5}+\sqrt{20}\right)$ cm long and $\sqrt{8}$ cm wide.

A small rectangle $\sqrt{2}$ cm long and $\sqrt{5}$ cm wide is cut out of the piece of card.

c Express the area of the card that is left as a percentage of the area of the large rectangle.

...................................%

(4)

(Total 6 marks)

9 a Write down the value of $36^{\frac{1}{2}}$

....

(1)

b $4n^{\frac{3}{2}} = 8^{-\frac{1}{3}}$

Find the value of n.

$n = $ ....

(3)

(Total 4 marks)

10 Solve $x^2 + 6x = 4$

Give your answers in the form $p \pm \sqrt{q}$, where p and q are integers.

....

(Total 3 marks)

11 $p = 3^8$

a Express $p^{\frac{1}{2}}$ in the form 3^k, where k is an integer.

....

(1)

$q = 2^9 \times 5^{-6}$

b Express $q^{-\frac{1}{3}}$ in the form $2^m \times 5^n$, where m and n are integers.

....

(2)

(Total 3 marks)