SOUTH SYDNEY HIGH SCHOOL – SURDS TEST
YEAR 10 ADVANCED MATHS

Circle the most appropriate answer:

1 $\sqrt{18}$ **simplifies to:**

A $3\sqrt{2}$ B $2\sqrt{3}$

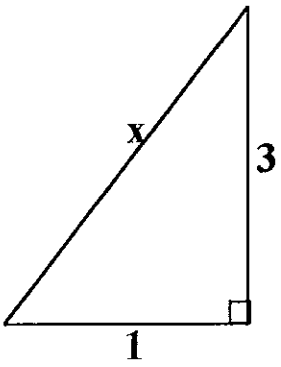
C $9\sqrt{2}$ D It can't be simplified since 18 is not a perfect square.

2 $\sqrt{5} \times \sqrt{10}$ **is equal to:**

A $\sqrt{15}$ B $5\sqrt{2}$ C $2\sqrt{5}$ D 25

3 **Which one of the following values of x is *not* a surd?**

A



B $x = \sqrt{44}$

C $x = \sqrt{10\,000}$ D $x = \sqrt[3]{9}$

4 $(2\sqrt{5})^2$ **is equal to:**

A $4\sqrt{5}$ B 10 C 20 D 50

5 **The simplest expression for** $\sqrt{32} + \sqrt{8}$ **is:**

A $\sqrt{40}$ B $2\sqrt{10}$

C $6\sqrt{2}$ D The expression cannot be simplified.

6 **Which one of the following statements is false? For all positive a and b:**

A $\sqrt{a^2b^2} = ab$ B $\sqrt{a^2 + b^2} = a + b$

C $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ D $\sqrt{a^3} = a^{\frac{3}{2}}$

7 **The value of** $\frac{5}{\sqrt{5}}$ **is:**

A $\sqrt{5}$ B 1

C $2\sqrt{5}$ D $5\sqrt{5}$

8 The *simplest* expression for $\frac{\sqrt{64}}{2\sqrt{32}}$ is:

A 1 B $\frac{4}{\sqrt{32}}$

C $\frac{\sqrt{2}}{2}$ D The expression cannot be simplified.

9 The *simplest* expression for $(\sqrt{5}+\sqrt{2})^2$ is:

A 3 B 7

C $7+\sqrt{20}$ D $7+2\sqrt{10}$

10 $(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{3})$ is equal to:

A $2\sqrt{15}$ B $2-2\sqrt{15}$

C 4 D 2

11 $(\sqrt{6}+\sqrt{8})(\sqrt{2}+\sqrt{6})$, in its *simplest* form, is:

A $10+3\sqrt{12}$ B $10+6\sqrt{3}$

C $6\sqrt{3}$ D $4\sqrt{7}$

12 $\sqrt{a^3b^4}$ in its *simplest* form is:

A $\frac{a^3b^4}{2}$ B a^6b^8

C $ab^2\sqrt{a}$ D a^3b^2

13 $(1-\sqrt{3})^2$ is equal to:

A $1-\sqrt{6}$ B $10-2\sqrt{3}$

C -2 D $4-2\sqrt{3}$

14 If $\sqrt{3}x = 9$, then x equals:

A $\sqrt{3}$ B 3

C $3\sqrt{3}$ D $9-\sqrt{3}$

15 The *simplest* expression for $\frac{1}{\sqrt{8}}$ is:

A $\frac{\sqrt{2}}{4}$ B $\frac{\sqrt{8}}{8}$

C $-\sqrt{7}$ D $-2\sqrt{2}$

16 **If $x(\sqrt{3}-\sqrt{2})=1$, then x must be equal to:**

A 1 B $\frac{1}{\sqrt{6}}$

C $\sqrt{3}-\sqrt{2}$ D $\sqrt{3}+\sqrt{2}$

17 **If $x=2\sqrt{3}$, then (x + 1)(x - 1) equals:**

A 35 B 5

C 11 D $11-4\sqrt{3}$

18 **The *simplest* expression for $\sqrt{x}+\sqrt{x^3}$ is:**

A $\sqrt{x}(x+1)$ B $2\sqrt{x}$

C x^2 D The expression cannot be simplified.

19 **As an entire surd, $3x\sqrt{y}$ is equal to:**

A $\sqrt{3x^2y}$ B $\sqrt{9xy}$

C $\sqrt{9x^2y}$ D $\sqrt{x^3y}$

20 **The only perfect cube in this list is:**

A x^8 B x^9

C $x^{\frac{1}{3}}$ D 3x

21 **The *simplest* expression for $\sqrt[3]{27x^4}$ is:**

A $9\sqrt[3]{x^4}$ B $3\sqrt[3]{x^4}$

C $3x\sqrt[3]{x}$ D The expression cannot be simplified.

22 **The *simplest* expression for $(\sqrt{a}+1)(\sqrt{a}-1)$ is:**

A a - 1 B a^2 - 1

C $a-1-2\sqrt{a}$ D a

23 **Given that $\sqrt{2}\approx 1.414$, $\sqrt{32}$ is approximately:**

A 5.656 B 11.312

C 17.414 D 22.624

24 **When expressed with a rational denominator, $\frac{2}{\sqrt{8}+\sqrt{6}}$ is equal to:**

A $\sqrt{8}-\sqrt{6}$ B $\sqrt{8}+\sqrt{6}$

C $2(\sqrt{8}-\sqrt{6})$ D $\frac{\sqrt{48}}{24}$

25 $\sqrt{2a^{16}bc^2} \times \sqrt{2b}$ **is equal to:**

A $a^4bc\sqrt{2}$ B $a^8\sqrt{2bc}$

C $2a^4bc$ D $2a^8bc$

26 $\sqrt{80}+2\sqrt{45}-\sqrt{11}+3\sqrt{44}$ **simplifies to:**

A $106-\sqrt{11}$ B $34\sqrt{5}+11\sqrt{11}$

C $10\sqrt{5}+5\sqrt{11}$ D 60

27 $a\sqrt{b}(2a\sqrt{b}+3\sqrt{a})$ **simplifies to:**

A $2a^2b+3a\sqrt{ab}$ B $2a^2b+3\sqrt{a}$

C $2a^2\sqrt{b}+3a\sqrt{ab}$ D $5a^3b\sqrt{ab}$

28 **If** $a=\sqrt{3}$ **and** $b=\sqrt{2}$**, then the simplest expression for the value of** $\dfrac{a+b}{a-b}$ **is:**

A $\sqrt{5}$ B $13+2\sqrt{6}$

C $5+2\sqrt{6}$ D $5-2\sqrt{6}$

29 **The simplest value for** $\dfrac{\sqrt{40}+\sqrt{30}}{\sqrt{10}}$ **is:**

A $4+\sqrt{30}$ B $2+\sqrt{30}$

C $\sqrt{7}$ D $2+\sqrt{3}$

30 **The basic numeral for** $\dfrac{x\sqrt{x}\times\sqrt{125}}{\sqrt{5}\times\sqrt{x^3}}$ **is:**

A $2\sqrt{30}$ B 5

C 25 D Unable to be determined without knowing the value of x.

ANSWERS TO WORKSHEET ON SURDS

1	A	2	B	3	C	4	C	5	C	6	B
7	A	8	C	9	D	10	D	11	B	12	C
13	D	14	C	15	A	16	D	17	C	18	A
19	C	20	B	21	C	22	A	23	A	24	A
25	D	26	C	27	A	28	C	29	D	30	B