Name: _____

ASM Tuition Academy

Fractional and Negative Indices

Instructions:

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
  - there may be more space than you need.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all you're working out.**

Information:

- The marks for each question are shown in brackets
  - use this as a guide as to how much time to spend on each question.

Advice:

- Read each question carefully before you start to answer it.
- Keep an eye on time.
- Try to answer every question.
- Check your answers if you have time at the end.

1. **Find the value of 4^{-1}**

_____

(Total for question 1 is 1 mark)

2. **Find the value of $(2 / 7)^{-1}$**

_____

(Total for question 2 is 1 mark)

3. **Find the value of 8^{-1}**

_____

(Total for question 3 is 1 mark)

4. **Find the reciprocal of 2**

_____

(Total for question 4 is 1 mark)

5. **Find the value of $81^{1/2}$**

_____

(Total for question 5 is 1 mark)

6. **Find the value of $25^{1/2}$**

_____

(Total for question 6 is 1 mark)

7. **Find the value of $121^{1/2}$**

_____

(Total for question 7 is 1 mark)

8. **Find the value of $64^{1/2}$**

_____

(Total for question 8 is 1 mark)

9. **Find the value of $49^{-1/2}$**

_____

(Total for question 9 is 1 mark)

10. Find the value of $8^{1/3}$

_____

(Total for question 10 is 1 mark)

11. Find the value of $27^{1/3}$

_____

(Total for question 11 is 1 mark)

12. Find the value of $125^{1/3}$

_____

(Total for question 12 is 1 mark)

13. Find the value of $216^{1/3}$

_____

(Total for question 13 is 1 mark)

14. Find the value of $216^{-1/3}$

_____

(Total for question 14 is 1 mark)

15. Find the value of $8^{-2/3}$

_____

(Total for question 15 is 2 mark)

16. Find the value of $64^{2/3}$

_____

(Total for question 16 is 2 mark)

17. Find the value of $27^{-2/3}$

_____

(Total for question 17 is 2 mark)

18. Find the value of $216^{-2/3}$

_____

(Total for question 18 is 2 mark)

19. Find the value of $(27x^6)^{2/3}$

_____

(Total for question 19 is 2 mark)

20. Find the value of $(8 / 27)^{-2/3}$

_____

(Total for question 20 is 2 marks)

21. Find the value of $(9 / 64)^{-3/2}$

_____

(Total for question 21 is 2 marks)

22. Find the value of $(125 / 216)^{-2/3}$

_____

(Total for question 22 is 2 marks)

23. Find the value of $(81 / 49)^{-3/2}$

_____

(Total for question 23 is 2 marks)

24. Find the value of $\sqrt[4]{(9 \times 9 \times 10^8}$)

_____

(Total for question 24 is 2 marks)

25. Find the value of $\sqrt[3]{(5 \times 25 \times 10^{12})}$

_____

(Total for question 25 is 2 marks)

26. Given that $5 \times \sqrt{5} = 5^n$
Find the value n

_____

(Total for question 26 is 2 marks)

27. Given that $7 \times \sqrt{343} = 7^n$
Find the value n

_____

(Total for question 27 is 2 marks)

28. Given that $p = 2^x$ **and** $q = 2^y$
Express in terms of p and / or q.
i) $\quad 2^{x+y}$

_____

ii) $\quad 2^{x-1}$

_____

iii) $\quad 2^{2x}$

_____

(Total for question 28 is 3 marks)

29. Given that $4^{-n} = 0.5$
Find the value of $(4^n)^2$

_____

(Total for question 29 is 2 marks)

30. Given that $3^{-n} = 0.5$
Find the value of $(3^n)^3$

_____

(Total for question 30 is 2 marks)

31. Given that $4^n = 32$
Find the value of n.

_____

(Total for question 31 is 2 marks)

32 Given that $25^{-n} = 125$
Find the value of n.

_____

(Total for question 31 is 2 marks)