**Basic Laws of Indices GREEN**

1. Write each of the following using index notation:

 a. 4 x 4 x 4 x 4 x 4 b. 7 x 7 x 7 x 7

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. a x a x a x a d. f x f x g x g x g

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

2. Work out the value of each of the following:

 a. 32 b. 25 c. 103

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 51 e. 40 f. 15

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

3. Simplify the following expressions, giving your answer in index notation:

 a. 36 x 37 b. 24 x 25 c. m3 x m6

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 4 x 43 e. 38 ÷ 33 f. h4 ÷ h2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 g. (63)4 h. b3 x b2 x b5 i. (94)0

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 j. 812 k. y5 l. r4 x r3

 88 y r5

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

4. Simplify the following expressions, giving your answer in index notation:

 a. 3-1 b. 4-2 c. f-4

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 5-3 e. g5 ÷ g7 f. y4 x y-3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

5. Fill in the missing numbers:

 a. 4 = 2🞏 b. 27 = 3🞏 c. 125 = 🞏3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 1 = 3🞏 e. 10 000 = 10🞏 f. 64 = 🞏3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

6. Fill in the missing numbers:

 a. (2🞏)3 = 212 b. (32)5 = 🞏10 c. (105)🞏 = 1015

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

7. Simplify each of the following, giving your answer in its simplest form:

 a. 32 x 30 x 34 b. 26 x 27 x 2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. 72 x 74 d. 23 x 24

 76 28 x 2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

8. Simplify each of the following, giving your answer in its simplest form:

 a. 2a3 x 5a4 b. 3y2 x 4y-2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. 7g3 x 2g2 d. 6r3 x 4r4

 g4 2r2 x 3r

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

e. 4d5 x 5d2 f. 3c2 x 4c5

 2d8 c7

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

**Basic Laws of Indices AMBER**

The power or index tells you how many times the number has been multiplied by itself.

1. Write each of the following using index notation:

 a. 4 x 4 x 4 x 4 x 4 b. 7 x 7 x 7 x 7

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. a x a x a x a d. f x f x g x g x g

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

2. Work out the value of each of the following:

 a. 32 b. 25 c. 103

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 51 e. 40 f. 15

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

3. Simplify the following expressions, giving your answer in index notation:

 a. 36 x 37 b. 24 x 25 c. m3 x m6

am x an = am+n

am ÷ an = am-n

a0 = 1

a-1 = 1

 a

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 4 x 43 e. 38 ÷ 33 f. h4 ÷ h2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 g. (63)4 h. b3 x b2 x b5 i. (94)0

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 j. 812 k. y5 l. r4 x r3

 88 y r5

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

4. Simplify the following expressions, giving your answer in index notation:

 a. 3-1 b. 4-2 c. f-4

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 5-3 e. g5 ÷ g7 f. y4 x y-3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

5. Fill in the missing numbers:

 a. 4 = 2🞏 b. 27 = 3🞏 c. 125 = 🞏3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 1 = 3🞏 e. 10 000 = 10🞏 f. 64 = 🞏3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

6. Fill in the missing numbers:

 a. (2🞏)3 = 212 b. (32)5 = 🞏10 c. (105)🞏 = 1015

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

7. Simplify each of the following, giving your answer in its simplest form:

 a. 32 x 30 x 34 b. 26 x 27 x 2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. 72 x 74 d. 23 x 24

 76 28 x 2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

8. Simplify each of the following, giving your answer in its simplest form:

 a. 2a3 x 5a4 b. 3y2 x 4y-2

Calculate with the numbers, then calculate with the indices separately.

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. 7g3 x 2g2 d. 6r3 x 4r4

 g4 2r2 x 3r

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

e. 4d5 x 5d2 f. 3c2 x 4c5

 2d8 c7

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

**Basic Laws of Indices RED**

The power or index tells you how many times the number has been multiplied by itself.

1. Write each of the following using index notation:

 a. 4 x 4 x 4 x 4 x 4 b. 7 x 7 x 7 x 7

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. a x a x a x a d. f x f x g x g x g

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

2. Work out the value of each of the following:

 a. 32 b. 25 c. 103

 3 x 3 = \_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 51 e. 40 f. 15

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

3. Simplify the following expressions, giving your answer in index notation:

 a. 36 x 37 b. 24 x 25 c. m3 x m6

am x an = am+n

am ÷ an = am-n

a0 = 1

a-1 = 1

 a

 36+7 =\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 4 x 43 e. 38 ÷ 33 f. h4 ÷ h2

 \_\_\_\_\_\_\_\_\_\_ 38-3 =\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 g. (63)4 h. b3 x b2 x b5 i. (94)0

 63x4 =\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 j. 812 k. y5 l. r4 x r3

 88 y r5

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

4. Simplify the following expressions, giving your answer in index notation:

 a. 3-1 b. 4-2 c. f-4

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 5-3 e. g5 ÷ g7 f. y4 x y-3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

5. Fill in the missing numbers:

 a. 4 = 2🞏 b. 27 = 3🞏 c. 125 = 🞏3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 d. 1 = 3🞏 e. 10 000 = 10🞏 f. 64 = 🞏3

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

6. Fill in the missing numbers:

 a. (2🞏)3 = 212 b. (32)5 = 🞏10 c. (105)🞏 = 1015

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

7. Simplify each of the following, giving your answer in its simplest form:

 a. 32 x 30 x 34 b. 26 x 27 x 2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. 72 x 74 d. 23 x 24

 76 28 x 2

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

8. Simplify each of the following, giving your answer in its simplest form:

 a. 2a3 x 5a4 b. 3y2 x 4y-2

Calculate with the numbers, then calculate with the indices separately.

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

 c. 7g3 x 2g2 d. 6r3 x 4r4

 g4 2r2 x 3r

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

e. 4d5 x 5d2 f. 3c2 x 4c5

 2d8 c7

 \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_