FPC 10 4.2 Combining the Exponents Laws

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Blk\_\_\_\_\_

1. Simplify the following.
2.  b)  c) 

d)  e) f) 

g)  h)  i) 

j)  k)  l) 

1. Write in simplest form.
2.  b)  c) 

d)  e)  f) 

g)  h)  i) 

j)  k)  l) 

m)  n)  o) 

1. Write in a simpler form and evaluate.
2.  b)  c) 

d)  e)  f) 

g)  h)  i) 

1. Write each expression in simplest form without brackets.
2.  b)  c) 

d)  e)  f) 

1. The intensity of light from a stage light decreases exponentially with the thickness of the coloured gels covering it. The intensity, I, in watts per square centimetre, can be calculated using the formula  where *n* is the number of coloured gels used. What is the intensity of light with
2. no gels? b) 2 gels? c) 4 gels?
3. a) Which power is larger: 35 or 34? Explain how you know. What can you conclude about comparing powers with

the same base?

1. Which power is larger: 35 or 45? Explain how you know. What can you conclude about comparing powers with the same exponent?
2. Using the exponent laws 2400 can be written as (24)100, and 3300 can be written as (33)100. Which of the powers is greatest? How do you know?
3. Which of the following powers is the greatest? How do you know? Arrange the power from least to greatest.

2666 3555 4444 5333 6222

**Answers:**

**1**a. 16*x*7 b. 10*x*10  c. 36*x*12 d. -27*x*10 e.  f. 4*x*4 g. -7*y*5 h. 7*x*8 i. -10*y* j. *x*12 k.  l. -2*x*2

**2**a.  b. -21*x*9*y*9 c. 27*x*6 d. 16*x*4*y*6 e. –*x*16 f. 80*y*12 g. *x*9 h. 45*x*4*y*13

i. -32*x*16*y*23 j. 144*x*8*y*4 k.  l.  m. 4*x*4*y*8 n. -64*x*18*y*6 o. -3*x*12*y*3

**3**a. 125 b. 64 c. -64 d. 531 441 e.  f. -1024 g. -243 h. -1 000 000 i. 100 000

**4**a. -*x*7 b. *x*6 c. –*x*2 d. *x*4 e. *x* f. –*x* **5**a. 1200 b. 768 c. 491.5

**6**a. 35 is greater. The greater the exponent, the greater the result will be if the base is the same.

b. 45 is greater. The greater the base, the greater the result will be if the exponent is the same.

c. 3300 is greater because it has a greater base when written with the same exponent.

d. 6222, 2666, 5333, 3555, 4444