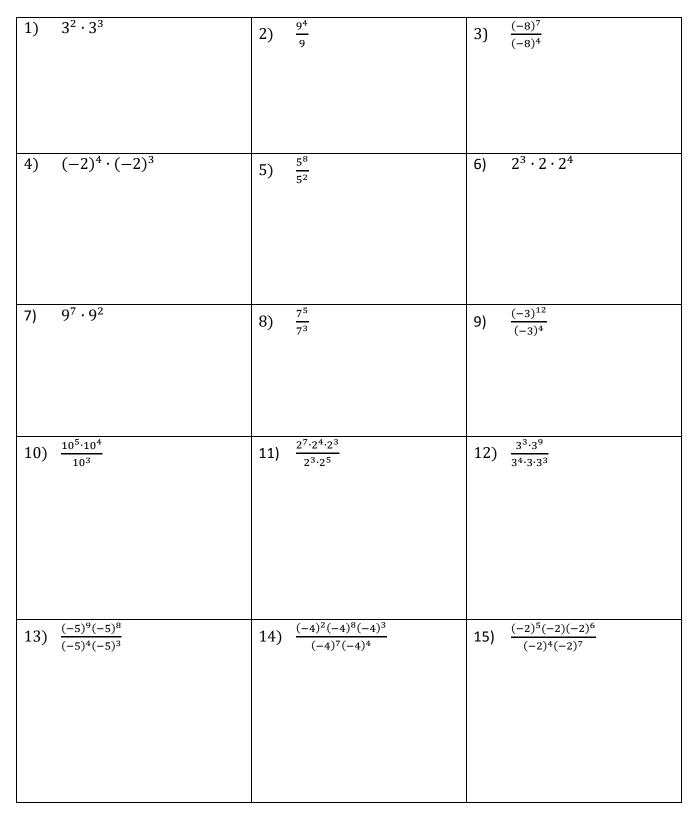
Unit 3: Exponents Day 2

Math 9 Principles

3-2: I can use the exponent laws for products and quotients. (add exponents for products of same bases, subtract for quotients)

A) Simplify each into a single power.



16) Rewrite each number with a base 2, then simplify. $\frac{1024\cdot512}{32\cdot8}$

- 17) Rewrite each number with a base 3, then simplify. $\frac{59049 \cdot 19683}{729}$
- 18) If there are estimated to be 10¹¹ galaxies in the known universe and 10¹¹ stars in each galaxy, how many stars are estimated to be in the universe?
- 19) If a spaceship can travel at a rate of about 10⁵ km per second, how long, in seconds, would it take to reach a star that is 10¹³ km away?
- 20) Suppose a computer storage array was divided into 2⁸ partitions and that each partition could store 2²⁶ bytes of data. How many bytes of data could the entire storage array hold, in total?
- 21) A space probe can travel at 10^{12} km in 10^9 hours. How far can it travel (in km) in 10^{27} hours? (Hint: First convert its speed to km/h.)
- 22) A (very) successful business person calculated that she earned 2⁸ dollars in each minute of each day. If there are roughly 2¹⁹ minutes in a year, how much, in total, was earned that year?
- 23) Suppose a comet can travel 10^8 km in 10^3 hours. Calculate how far it can travel in 10^{12} hours.
- 24) If an object has a speed of 10^9 km/h, how many hours would it take to travel 10^{32} km?