

## PRACTICE EXERCISES

1. A 'combination' lock has a dial bearing the numbers 1 through 16. How many different 3-number 'combinations' are possible if there are no restrictions on the 3 numbers (example: 16-5-4, 5-16-4, 3-3-12 are three different, valid 'combinations').  
A. 48            B. 4096            C. 3360            D. 256
2. Prior to the coin toss for a football game, the captains for the two teams meet at midfield. One team has three captains and the other team has five captains. Each captain from the first team shakes hands with each captain from the other team. How many handshakes occur?  
A. 30            B. 8            C. 15            D. 17
3. A seven-question quiz has four true/false questions followed by 3 multiple choice questions. For each multiple choice question there are four possible answers. In how many different ways is it possible to answer the seven questions?  
A. 12            B. 80            C. 28            D. 1024
4. Socrates is going to buy a new motorcycle. The motorcycles that interest him come with the following optional accessories: extra-noisy pipes, sidecar, trailer, training wheels. How many different accessory combinations are possible?  
A. 16            B. 8            C. 24            D. 10
5. When Euclid dresses up for goth night, he has to choose a cloak, a shade of dark lipstick, and a pair of boots. He has two cloaks, 6 shades of dark lipstick, and 3 pairs of boots. How many different combinations are possible?  
A. 15            B. 24            C. 11            D. 36
6. Harpo, Groucho, Chico, Zeppo, Gummo and Karl are running in a race. How many different orders of finish are possible?  
A. 36            B. 64            C. 720            D. 46656
7. Socrates, Euclid, Plato, Aristotle, Diogenes, and Democritus are going to choose from amongst themselves one person to wax the floor and another person to scrub the toilet. How many different outcomes are possible if Diogenes will not scrub the toilet?  
A. 36            B. 720            C. 30            D. 25
8. Gomer is going to order a pizza for his cat, Fido. The following toppings are available for cat pizzas: sparrow sprinkles, lizard lozenges, mousie munchies, butterfly bits, and beetle bites. He may choose any combination of those toppings (this includes the possibility that he may choose none of them). How many different topping combinations are possible?  
A. 32            B. 25            C. 120            D. 3125
9. When Diogenes the used-car salesman gets dressed for work, he has to choose a jacket, shirt, tie, belt, trousers and shoes. He has a plaid jacket, a checkered jacket, and a pink jacket; a white long-sleeved shirt, a white short-sleeved shirt, a green short-sleeved

shirt and a yellow long-sleeved shirt; a striped tie, a polka-dotted tie, a checkered tie, and a solid orange tie; a white patent-leather belt and a black patent-leather belt; black trousers, brown trousers, gray trousers, plaid trousers and pin-striped trousers; brown shoes, black patent-leather shoes, white patent-leather shoes, and sneakers.

How many different ensembles are possible today if he has already determined that he won't wear any stripes and he will wear everything that is white patent-leather?

- A. 288      B. 144      C. 15      D. 16

**10.** There are eight finalists in the Miss Sopchoppy contest. How many different outcomes are possible if one person will be selected First Runner-Up and another will be Miss Sopchoppy?

- A. 56      B. 64      C. 16      D. 256

**11.** Jethro has just purchased a hamster to be a companion for his gerbil, D.W. He is going to name the hamster by choosing a first name and second name from this list of names: Billy, Bobby, Bubba, Brett. The first name may or may not differ from the second name. How many different two-part names are possible?

- A. 8      B. 12      C. 16      D. 64

**12.** There are four Gators in a holding cell at the jail. They will be asked to arrange themselves from left to right in a police line-up. How many different line-ups are possible?

- A. 16      B. 8      C. 24      D. 256

**13.** Aristotle is going to register for classes next term. He has to choose one class from each of the following categories:

I. MGF1107, MAC1105, STA1014

II. REL2000, REL2121, REL2213

III. AFH1000, AMH1000, ASH3100, EUH2100

IV. LIT2020, LIT2081, LIT3043

How many different combinations of classes are possible if he has already decided that he will take LIT3043 and he won't take EUH2100 and he won't take REL2000?

A. 108      B. 19      C. 24      D. 18

**14.** Harpo, Groucho, Chico, Zeppo, Gummo and Karl are the finalists in the fabulous Clearers' Publishinghouse sweepstakes. Two prizes will be awarded: the Grand Prize and the Even Grander Prize. The prizewinners will be randomly selected (and it is possible that one person may win both prizes). How many outcomes are possible?

A. 720      B. 128      C. 30      D. 36

**15.** Euclid needs to create a password for his internet account. To simplify things, he is going to form a four-letter password by choosing letters from this set: {A, D, E, M, R, S, T}. How many different passwords are possible if the second and fourth letters will be vowels and the other two letters won't be vowels (repeated letters are possible)?

A. 40      B. 100      C. 256      D. 14

**16.** Socrates is going to buy a new pencil sharpener. He finds that the following six optional accessories are available: titanium bearings, fuel injection, CD rom, chromium alloy blades, air bags, HEPA filter shavings collector. How many different accessory combinations are possible?

A. 64      B. 36      C. 720      D. 12

#### **ANSWERS TO PRACTICE PROBLEMS**

<b>1. B</b>	<b>2. C</b>	<b>3. D</b>	<b>4. A</b>	<b>5. D</b>	<b>6. C</b>
<b>7. D</b>	<b>8. A</b>	<b>9. B</b>	<b>10. A</b>	<b>11. C</b>	<b>12. C</b>
<b>13. D</b>	<b>14. D</b>	<b>15. B</b>	<b>16. A</b>		