

Maths Circle India: Module 8, Session 2  
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1 Division

- (a) Let  $a$  and  $b$  be two positive integers. Show that there are integers  $q$  and  $r$  such that  $b = qa + r$ , where  $r = 0$  or  $0 < r < a$ .
- (b) Now let  $a$  be a positive integer and  $b$  be any integer. Show that there are integers  $q$  and  $r$  such that  $b = qa + r$ , where  $r = 0$  or  $0 < r < a$ .
- (c) Now let  $a$  and  $b$  be two integers where  $a$  is negative. Show that there are integers  $q$  and  $r$  such that  $b = qa + r$ , where  $r = 0$  or  $0 < r < -a$ .