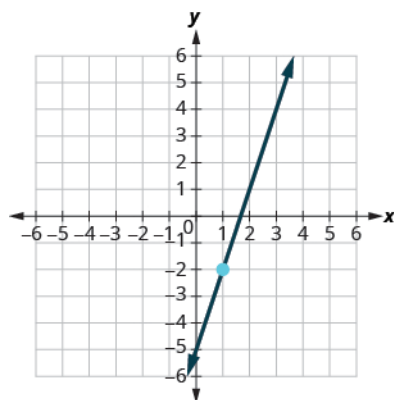# 4.6 EXERCISES

Practice Makes Perfect

Find an Equation of the Line Given the Slope and *y*-Intercept

In the following exercises, find the equation of a line with given slope and y-intercept. Write the equation in slope–intercept form.

386. slope 3 and *y*-intercept $(0, 5)$

387. slope 4 and *y*-intercept $(0, 1)$

388. slope 6 and *y*-intercept $(0, -4)$

389. slope 8 and *y*-intercept $(0, -6)$

390. slope -1 and *y*-intercept $(0, 3)$

391. slope -1 and *y*-intercept $(0, 7)$

392. slope -2 and *y*-intercept $(0, -3)$

393. slope -3 and *y*-intercept $(0, -1)$

394. slope $\frac{3}{5}$ and *y*-intercept $(0, -1)$

395. slope $\frac{1}{5}$ and *y*-intercept $(0, -5)$

396. slope $-\frac{3}{4}$ and *y*-intercept $(0, -2)$

397. slope $-\frac{2}{3}$ and *y*-intercept $(0, -3)$

398. slope 0 and *y*-intercept $(0, -1)$

399. slope 0 and *y*-intercept $(0, 2)$

400. slope -3 and *y*-intercept $(0, 0)$

401. slope -4 and *y*-intercept $(0, 0)$

In the following exercises, find the equation of the line shown in each graph. Write the equation in slope–intercept form.
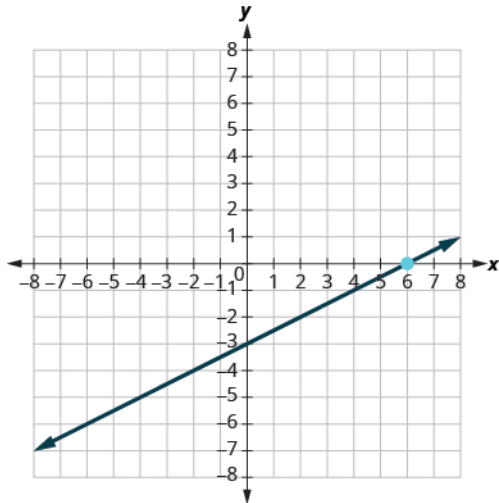
402.

403.
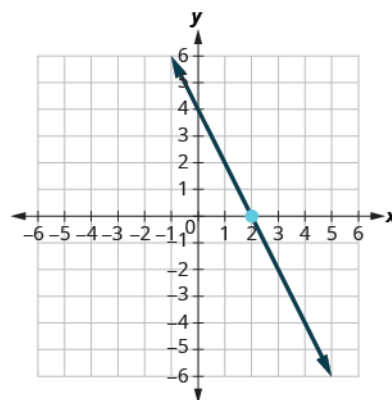
404.

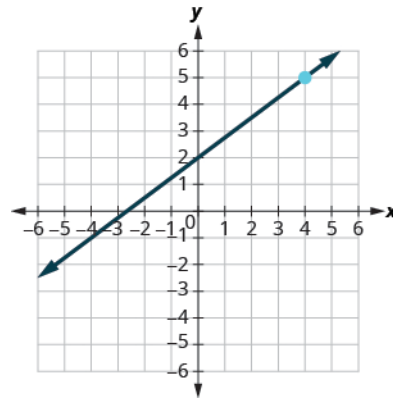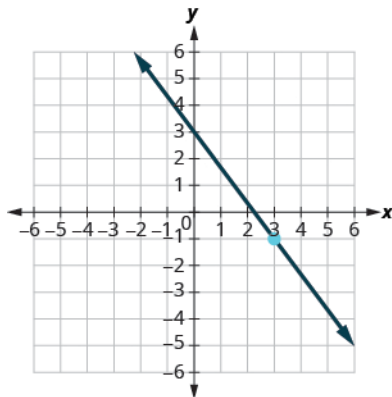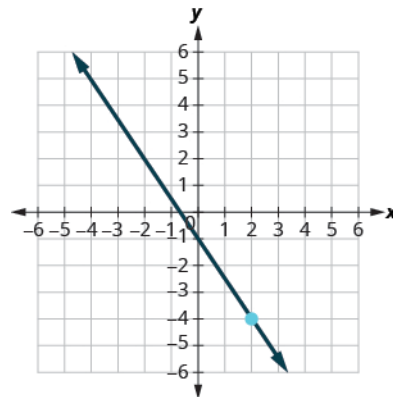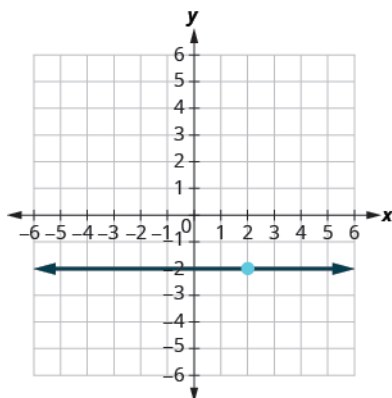**405.**

406.

407.

408.

409.

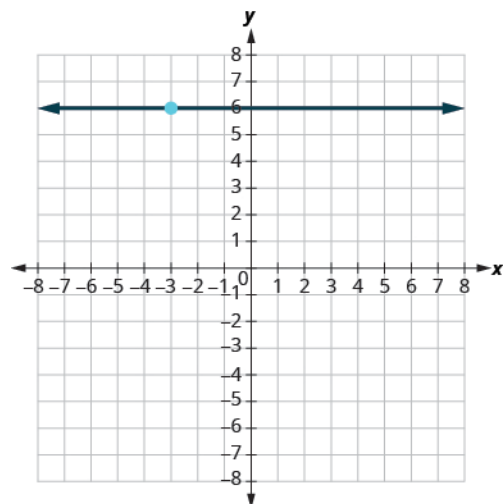### Find an Equation of the Line Given the Slope and a Point

In the following exercises, find the equation of a line with given slope and containing the given point. Write the equation in

slope–intercept form.

410. $m = \frac{5}{8}$, point $(8, 3)$

411. $m = \frac{3}{8}$, point $(8, 2)$

412. $m = \frac{1}{6}$, point $(6, 1)$

413. $m = \frac{5}{6}$, point $(6, 7)$

414. $m = -\frac{3}{4}$, point $(8, -5)$

415. $m = -\frac{3}{5}$, point $(10, -5)$

416. $m = -\frac{1}{4}$, point $(-12, -6)$

417. $m = -\frac{1}{3}$, point $(-9, -8)$

418. Horizontal line containing $(-2, 5)$

419. Horizontal line containing $(-1, 4)$

420. Horizontal line containing $(-2, -3)$

421. Horizontal line containing $(-1, -7)$

422. $m = -\frac{3}{2}$, point $(-4, -3)$

423. $m = -\frac{5}{2}$, point $(-8, -2)$

424. $m = -7$, point $(-1, -3)$

425. $m = -4$, point $(-2, -3)$

426. Horizontal line containing $(2, -3)$

427. Horizontal line containing $(4, -8)$

Find an Equation of the Line Given Two Points

In the following exercises, find the equation of a line containing the given points. Write the equation in slope–intercept form.

428. $(2, 6)$ and $(5, 3)$

429. $(3, 1)$ and $(2, 5)$

430. $(4, 3)$ and $(8, 1)$

431. $(2, 7)$ and $(3, 8)$

432. $(-3, -4)$ and $(5 - 2)$

433. $(-5, -3)$ and $(4, -6)$

434. $(-1, 3)$ and $(-6, -7)$

435. $(-2, 8)$ and $(-4, -6)$

436. $(6, -4)$ and $(-2, 5)$

437. $(3, -2)$ and $(-4, 4)$

438. $(0, 4)$ and $(2, -3)$

439. $(0, -2)$ and $(-5, -3)$

440. $(7, 2)$ and $(7, -2)$

441. $(4, 2)$ and $(4, -3)$

442. $(-7, -1)$ and $(-7, -4)$

443. $(-2, 1)$ and $(-2, -4)$

444. $(6, 1)$ and $(0, 1)$

445. $(6, 2)$ and $(-3, 2)$

446. $(3, -4)$ and $(5, -4)$

447. $(-6, -3)$ and $(-1, -3)$

448. $(4, 3)$ and $(8, 0)$

449. $(0, 0)$ and $(1, 4)$

450. $(-2, -3)$ and $(-5, -6)$

451. $(-3, 0)$ and $(-7, -2)$

452. $(8, -1)$ and $(8, -5)$

453. $(3, 5)$ and $(-7, 5)$

Find an Equation of a Line Parallel to a Given Line

In the following exercises, find an equation of a line parallel to the given line and contains the given point. Write the equation in slope–intercept form.

454. line $y = 4x + 2$, point $(1, 2)$

455. line $y = 3x + 4$, point $(2, 5)$

456. line $y = -2x - 3$, point $(-1, 3)$

457. line $y = -3x - 1$, point $(2, -3)$

458. line $3x - y = 4$, point $(3, 1)$

459. line $2x - y = 6$, point $(3, 0)$

460. line $4x + 3y = 6$, point $(0, -3)$

461. line $2x + 3y = 6$, point $(0, 5)$

462. line $x = -3$, point $(-2, -1)$

463. line $x = -4$, point $(-3, -5)$ **464.** line $x - 2 = 0$,   point   **465.** line $x - 6 = 0$,   point
                                                      $(1, -2)$ $(4, -3)$

466. line $y = 5$, point $(2, -2)$ **467.** line $y = 1$, point $(3, -4)$ **468.** line $y + 2 = 0$,   point
                                                                                              $(3, -3)$

469. line $y + 7 = 0$,   point
$(1, -1)$

Find an Equation of a Line Perpendicular to a Given Line

In the following exercises, find an equation of a line perpendicular to the given line and contains the given point. Write the equation in slope–intercept form.

470. line $y = -2x + 3$,   point   **471.** line $y = -x + 5$,   point   **472.** line $y = \frac{3}{4}x - 2$,   point
$(2, 2)$ $(3, 3)$ $(-3, 4)$

473. line $y = \frac{2}{3}x - 4$,   point   **474.** line $2x - 3y = 8$,   point   **475.** line $4x - 3y = 5$,   point
                                                      $(4, -1)$ $(-3, 2)$
$(2, -4)$

476. line $2x + 5y = 6$,   point   **477.** line $4x + 5y = -3$,   point   **478.** line $y - 3 = 0$,   point
$(0, 0)$ $(0, 0)$ $(-2, -4)$

479. line $y - 6 = 0$,   point   **480.** line *y*-axis, point $(3, 4)$ **481.** line *y*-axis, point $(2, 1)$
$(-5, -3)$

Mixed Practice

In the following exercises, find the equation of each line. Write the equation in slope–intercept form.

482. Containing the points $(4, 3)$ and $(8, 1)$ **483.** Containing the points $(2, 7)$ and $(3, 8)$

484. $m = \frac{1}{6}$, containing point $(6, 1)$ **485.** $m = \frac{5}{6}$, containing point $(6, 7)$

486. Parallel to the line $4x + 3y = 6$, containing point   **487.** Parallel to the line $2x + 3y = 6$, containing point
$(0, -3)$ $(0, 5)$

488. $m = -\frac{3}{4}$, containing point $(8, -5)$ **489.** $m = -\frac{3}{5}$, containing point $(10, -5)$

490. Perpendicular to the line $y - 1 = 0$, point   **491.** Perpendicular to the line *y*-axis, point $(-6, 2)$
$(-2, 6)$

492. Containing the points $(4, 3)$ and $(8, 1)$ **493.** Containing the points $(-2, 0)$ and $(-3, -2)$

494. Parallel to the line $x = -3$, containing point   **495.** Parallel to the line $x = -4$, containing point
$(-2, -1)$ $(-3, -5)$

496. Containing the points $(-3, -4)$ and $(2, -5)$ **497.** Containing the points $(-5, -3)$ and $(4, -6)$

498. Perpendicular to the line $x - 2y = 5$, containing point $(-2, 2)$

499. Perpendicular to the line $4x + 3y = 1$, containing point $(0, 0)$

Everyday Math

500. Cholesterol. The age, x, and LDL cholesterol level, y, of two men are given by the points $(18, 68)$ and $(27, 122)$. Find a linear equation that models the relationship between age and LDL cholesterol level.

501. Fuel consumption. The city mpg, x, and highway mpg, y, of two cars are given by the points $(29, 40)$ and $(19, 28)$. Find a linear equation that models the relationship between city mpg and highway mpg.

Writing Exercises

502. Why are all horizontal lines parallel?

503. Explain in your own words why the slopes of two perpendicular lines must have opposite signs.

Self Check

ⓐ *After completing the exercises, use this checklist to evaluate your mastery of the objectives of this section.*

I can...	Confidently	With some help	No-I don't get it!
find the equation of the line given the slope and y-intercept.			
find an equation of the line given the slope and a point.			
find an equation of the line given two points.			
find an equation of a line parallel to a given line.			
find an equation of a line perpendicular to a given line.			

ⓑ *On a scale of 1-10, how would you rate your mastery of this section in light of your responses on the checklist? How can you improve this?*