BLM Answers

Get Ready

1. a) $(1, 2)$ **b)** $(-1, 4)$ **c)** $\left(2, \frac{3}{2}\right)$ **d)** $(-2, 7)$

2. a) 5 **b)** $2\sqrt{13}$ **c)** 7 **d)** 4

3. a) $(-3, -1)$ **b)** $\left(\frac{7}{2}, -\frac{3}{2}\right)$ **c)** $(3, 5)$

4. a) $(3, -3)$ **b)** $(4, -2)$ **c)** $(2, 0)$

5. a) $\angle B = 58$ **b)** $\angle F = 12°$

6. a) $x = 64$ **b)** $y = 84°$

7. Answers may vary. For example:

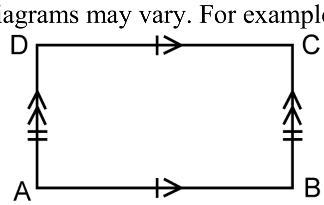
a) A square is a quadrilateral with four equal sides and four 90° angles.

b) A rhombus has four equal sides and the opposite sides are parallel.

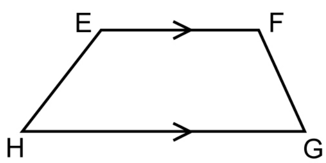
c) A kite has two pairs of adjacent sides equal, the diagonals are not equal in length, and the diagonals intersect at right angles. The diagonal between the equal sides is the right bisector of the other diagonal.

8. Diagrams may vary. For example:

a)



b)

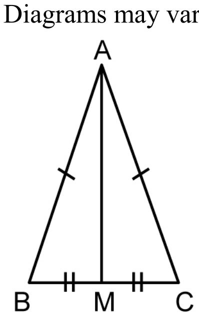


Section 3.1 Practice Master

1. 14 square units

2. 32 square units

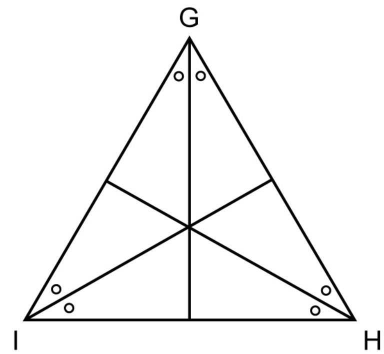
3. a) Diagrams may vary. For example:



b) For an isosceles triangle, the median between the equal sides is also the altitude from that vertex. The median bisects the angle at that vertex and bisects the opposite side. It is the same as the right bisector of the opposite side.

c) Answers will vary.

4. a) Diagrams may vary. For example:



b) Answers may vary. For example: Construct △GHI. Then, construct all three angle bisectors and all three right bisectors and verify that they coincide.

5. Isosceles triangles have two equal sides and two equal angles. The median drawn from the vertex between the equal sides is the same as the angle bisector of the same vertex, and the altitude drawn from the vertex between the equal sides is the same as the right bisector of the opposite side.

6. a) Answers will vary.

b) The slopes are equal, so the line segments are parallel.

c) Answers may vary. For example: Measure the length of each segment to show that XY is half the length of PR.

7. Yes. Explanations may vary. For example: Right bisectors drawn in examples of each type of triangle intersect at a single point in each triangle.

8. a) Yes. Explanations may vary. For example: Altitudes drawn in examples of each type of triangle intersect at a single point.

b) If the triangle is a right triangle, the orthocentre is located at the right angle.

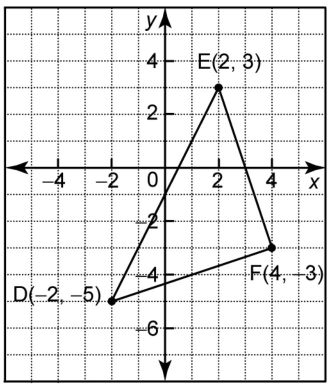
c) If the triangle is an obtuse triangle, the orthocentre is located outside the triangle.

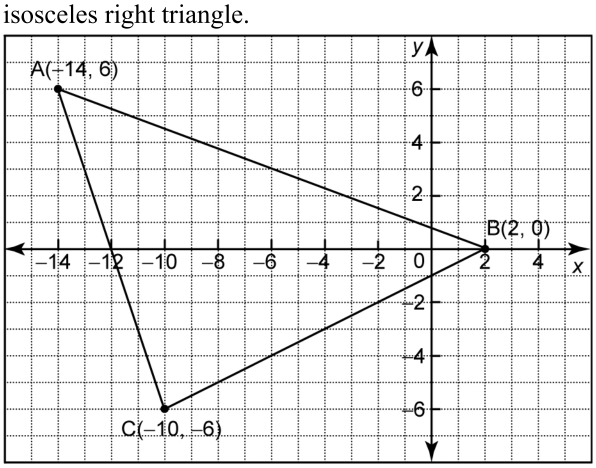
Section 3.2 Practice Master

1. a) $y = \frac{1}{7}x + \frac{10}{7}$ **b)** $y = \frac{1}{6}x + \frac{3}{2}$

2. a) $m_{AB} = \frac{1}{2}$ and $m_{MN} = \frac{1}{2}$. Since $m_{AB} = m_{MN}$, AB is parallel to MN.

b) $MN = \frac{3}{2}\sqrt{5}$ and $AB = 3\sqrt{5}$, so MN is half the length of AB.

3. a) DE = $4\sqrt{5}$, DF = $4\sqrt{5}$, EF = $5\sqrt{6}$
Since DE = DF = $4\sqrt{5}$, △DEF is isosceles.
b) The midpoint of EF is M(4, 0). Therefore, the median from vertex D is DM.
Since $m_{DM} = -\frac{1}{3}$ and $m_{EF} = 3$, $m_{DM} \times m_{EF} = -1$, so DM is perpendicular to EF, which makes DM an altitude of the triangle.
4. Answers may vary. For example:
a) Construct △DEF and measure the sides to verify that DE = DF.
b) Construct the midpoint, M, of EF. Construct segment DM, the median from vertex D. Verify that DM is perpendicular to EF, so that it is also the altitude from vertex D.
5. a)


b) DE = $4\sqrt{5}$, EF = $2\sqrt{10}$, DF = $2\sqrt{10}$
c) $m_{DE} = 2$, $m_{EF} = \frac{1}{3}$, $m_{DF} = -3$
Since $m_{EF} \times m_{DF} = -1$, ∠DFE = 90°.
d) Since EF = DF and ∠DFE = 90°, △DEF is an isosceles right triangle.
6. Answers may vary. For example:
a) Construct △DEF.
b) Measure the lengths of the sides of △DEF.
c) Measure ∠DFE.
d) Since EF = DF and ∠DFE = 90°, △DEF is an isosceles right triangle.
7. a)


b) D(–6, 3), E(–12, 0)

c) Since $m_{DE} = m_{BC} = \frac{1}{2}$, DE is parallel to BC.
d) BC = $6\sqrt{5}$ and DE = $3\sqrt{5}$. Therefore, BC is twice the length of DE.

Section 3.3 Practice Master

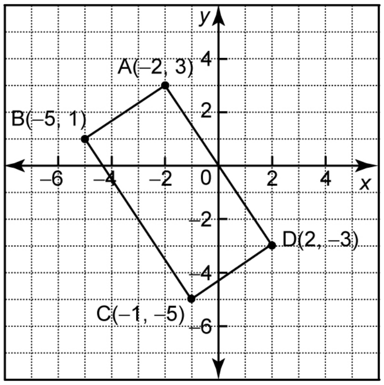
1. a) AE = CE, BE = DE
b) EM = GM, FM = HM
2. a) AB is parallel to DC; AD is parallel to BC.
b) AB = DC, AD = BC
3. a) MN is parallel to QR; MR is parallel to NQ.
b) MN = QR, MR = NQ
4. Answers may vary. For example: The diagonals of a rectangle are equal in length and bisect one another.
5. Answers may vary. For example: Construct a square. Construct the diagonals and their point of intersection. Measure the angles at the point of intersection to verify that the diagonals are perpendicular. Construct the midpoint of each diagonal and verify that it coincides with the point of intersection of the diagonals. Verify that your conclusions do not change as you drag the vertices of the square.
6. a) Answers may vary. For example: Construct a rectangle and its diagonals. Construct the midpoint of each diagonal and verify that it coincides with the point of intersection of the diagonals. Drag the vertices of the rectangle to verify your conclusions.
b) Answers may vary. For example: Construct a rectangle and its diagonals. Measure the diagonals to verify that they are equal in length. Drag the vertices of the rectangle to verify your conclusions.
c) Answers may vary. For example: Construct a kite and its diagonals. Measure the angle at the point of intersection of the diagonals to see that it is 90°. Construct the midpoint of the shorter diagonal and verify that it coincides with the point of intersection of the diagonals. Drag the vertices of the kite to verify your conclusions.

Section 3.4 Practice Master

1. $m_{WX} = -\frac{1}{2}$, $m_{ZY} = -\frac{1}{2}$, WX = $\sqrt{5}$, ZY = $3\sqrt{5}$,
$m_{WZ} = \frac{3}{5}$, $m_{XY} = 5$
Since $m_{WX} = m_{ZY} = -\frac{1}{2}$, WX ≠ ZY, and $m_{WZ} \neq m_{XY}$, quadrilateral WXYZ is a trapezoid.
2. PQ = 5, QR = 5, RS = 5, SP = 5, $m_{SP} = -\frac{4}{3}$,
$m_{QR} = -\frac{4}{3}$, $m_{PQ} = 0$, $m_{RS} = 0$
Since PQ = QR = RS = SP = 5, $m_{SP} = m_{QR}$, and $m_{PQ} = m_{RS}$, quadrilateral PQRS is a rhombus.

3. Since DE = EF = $\sqrt{10}$ and DG = GF = 5, quadrilateral DEFG is a kite.

4. a)



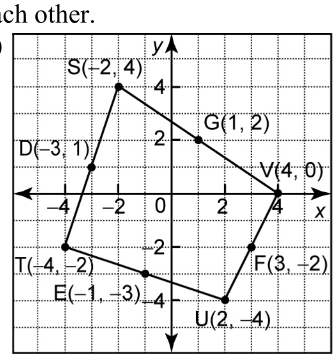
b) $m_{AB} = \frac{2}{3}$, $m_{CD} = \frac{2}{3}$, $m_{BC} = -\frac{3}{2}$, $m_{AD} = -\frac{3}{2}$.

Since $m_{AB} \times m_{BC} = -1$, ∠ABC = 90°.
Since $m_{BC} \times m_{CD} = -1$, ∠BCD = 90°.
Since $m_{CD} \times m_{AD} = -1$, ∠CDA = 90°.
Since $m_{AD} \times m_{AB} = -1$, ∠DAC = 90°.
Since $m_{AB} = m_{CD}$, AB is parallel to CD.
Since $m_{BC} = m_{AD}$, BC is parallel to AD.
AB = $\sqrt{13}$, BC = $2\sqrt{13}$, CD = $\sqrt{13}$, AD = $2\sqrt{13}$;
AB = CD and BC = DA.
Since it has four 90° angles and opposite sides are equal in length, quadrilateral ABCD is a rectangle.

c) AC = $\sqrt{65}$, BD = $\sqrt{65}$
The diagonals are equal in length.
The midpoint of the diagonal AC and the midpoint of the diagonal BD are both located at $M\left(-\frac{3}{2}, -1\right)$.

Since the midpoints coincide, the diagonals bisect each other.

5. a), b)



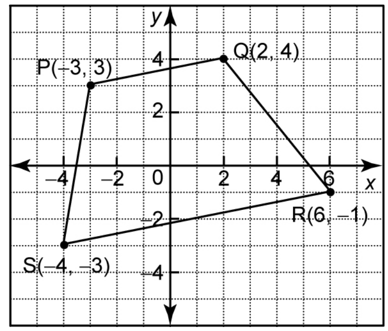
c) $m_{DE} = -2$, $m_{EF} = \frac{1}{4}$, $m_{FG} = -2$, $m_{DG} = \frac{1}{4}$

Since $m_{DE} = m_{FG}$, DE is parallel to FG.
Since $m_{EF} = m_{DG}$, EF is parallel to DG.

d) DE = $2\sqrt{5}$, EF = $\sqrt{17}$, FG = $2\sqrt{5}$, and DG = $\sqrt{17}$. Since DE = FG and EF = DG, the opposite sides of DEFG are equal in length.

6. Answers may vary. For example:
a) Construct quadrilateral STUV.
b) Construct the midpoint of each side and display the coordinates. Construct line segments joining adjacent midpoints.
c) Measure and compare the slopes of the sides of DEFG.
d) Measure and compare the lengths of the sides of DEFG.

7. a)



b) The midpoints of the non-parallel sides PS and QR are $E\left(-\frac{7}{2}, 0\right)$ and $F\left(4, \frac{3}{2}\right)$, respectively;

$m_{PQ} = \frac{1}{5}$, $m_{SR} = \frac{1}{5}$, and $m_{EF} = \frac{1}{5}$.

Since $m_{PQ} = m_{SR} = m_{EF}$, EF is parallel to PQ and EF is also parallel to SR.

8. Answers may vary. For example:
a) Construct trapezoid PQRS.
b) Construct the midpoints, E and F, of PS and QR. Measure the slopes of EF, PQ, and SR. Since the slopes are equal, EF is parallel to both PQ and SR.

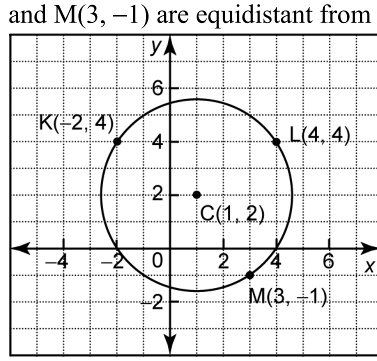
Section 3.5 Practice Master

1. a) $\left(-\frac{1}{2}, \frac{7}{2}\right)$ b) $m_{DE} = \frac{1}{7}$

c) $m_{OM} = -7$. Since $m_{DE} \times m_{OM} = -1$, OM is perpendicular to DE.

2. a) CK = $\sqrt{13}$, CL = $\sqrt{13}$, CM = $\sqrt{13}$
Since CK = CL = CM, the points K(–2, 4), L(4, 4), and M(3, –1) are equidistant from the point C(1, 2).

b)



3. a) Answers may vary. For example: The distance formula for any point P(x, y) that is $\sqrt{34}$ units from the origin (0, 0) is $\sqrt{(x-0)^2+(y-0)^2}=\sqrt{34}$, which simplifies to $x^2 + y^2 = 34$, which is the equation of a circle with centre O(0, 0).
   b) Since $(-3)^2 + 5^2 = 34$ and $(-5)^2 + (-3)^2 = 34$, both points lie on the circle.
   c) The midpoint of AB is (–4, 1). The slope of chord AB is $m_{AB} = 4$ and the slope of the right bisector OM of chord AB is $m_{OM} = -\frac{1}{4}$.
   Since $m_{AB} \times m_{OM} = -1$, OM is perpendicular to AB.
4. a) The midpoint of XY is M$\left(\frac{3}{2}, \frac{7}{2}\right)$; $m_{XY} = -\frac{3}{7}$; the slope of the right bisector of XY is $m = \frac{7}{3}$; the equation of the right bisector of XY is $y = \frac{7}{3}x$; the centre of the circle is O(0, 0). Since the point O(0, 0) lies on the line $y = \frac{7}{3}x$, the centre of the circle lies on the right bisector of the chord XY.
   b) $\sqrt{29}$
5. (–2, 2)
6. Answers may vary. For example: Construct line segments DE and EF. Construct the right bisectors of DE and EF. Construct the point of intersection of the right bisectors, and display its coordinates.
7. Answers may vary. For example: Construct line segment CO. Since O is the centre of the circle, it is the midpoint of the diameter AB. Thus, CO is the median from C to AB. CO is also a radius of the circle. Thus, CO = AO = BO. Since CO = AO, △AOC is isosceles, and ∠OAC = ∠OCA. Since BO = CO, △BOC is isosceles, and ∠OBC = ∠OCB. In △ABC,

$$\begin{aligned}
\angle BAC + \angle BCA + \angle CBA &= 180^\circ\\
\angle OAC + \angle OCA + \angle OCB + \angle OBC &= 180^\circ\\
\angle OCA + \angle OCA + \angle OCB + \angle OCB &= 180^\circ\\
2\angle OCA + 2\angle OCB &= 180^\circ\\
\angle OCA + \angle OCB &= 90^\circ\\
\angle ACB &= 90^\circ
\end{aligned}$$

Chapter 3 Review

1. a) The altitude of a triangle is a line segment from one vertex of a triangle to the opposite side so that the line segment is perpendicular to the side.
   b) The altitudes of a triangle intersect at a point called the orthocentre. If the triangle is a right triangle, the orthocentre is located at the vertex that has the 90° angle.
   c) Construct a triangle and its three altitudes. Observe the point of intersection of the altitudes while dragging the vertices of the original triangle. Construct a right triangle and its three altitudes. Note that the orthocentre is located at the vertex that has the 90° angle.
2. a) AB = $2\sqrt{2}$, BC = $2\sqrt{2}$, AC = 4
   Since AB = BC, the triangle is isosceles.
   b) M(–2, 4), N(0, 4)
   c) CM = $\sqrt{10}$, AN = $\sqrt{10}$
   Thus, the medians are equal in length.
3. a) Since $m_{PQ} = \frac{2}{3}$ and $m_{QR} = -\frac{3}{2}$, $m_{PQ} \times m_{QR} = -1$ and ∠PQR = 90°. Then, the sides PQ and QR are perpendicular and the triangle is a right triangle.
   b) You could also check that the side lengths satisfy the Pythagorean theorem, where the hypotenuse of the triangle is PR.
4. a) XY = $2\sqrt{13}$, XZ = $2\sqrt{13}$, YZ = $2\sqrt{26}$
   Since XY = XZ, △XYZ is isosceles.
   b) The midpoint of YZ is M(–1, –2), and $m_{YZ} = 5$. Since the slope of the line segment from X to M(–1, –2) is $-\frac{1}{5}$, the line segment YZ is perpendicular to XM and is the altitude from X and bisects YZ.
5. a) KL has slope 1 and KM has slope –1. Thus, KL and KM are perpendicular.
   b) The midpoint of LM is a distance of $\sqrt{17}$ from each vertex.
6. a) Answers may vary. For example: Construct a square and its diagonals. Measure the angle at the point of intersection of the diagonals to verify that it is a right angle. Construct the midpoints of the diagonals and verify that they coincide with the point of intersection of the diagonals. Drag the vertices of the square to verify your conclusions.
   b) Answers may vary. For example: Construct a parallelogram and its diagonals. Construct the midpoints of the diagonals and verify that they coincide with the point of intersection of the diagonals. Drag the vertices of the parallelogram to verify your conclusions.
   c) Answers may vary. For example: Construct a kite and its diagonals. Measure the angle at the point of intersection of the diagonals and verify that its measure is 90°. Construct the midpoint of the shorter diagonal and verify that it coincides with the point of intersection of the diagonals. Drag the vertices of the kite to verify your conclusions.
7. a) Answers will vary.
   b) In △ABC and △CDA, since ∠ABC = ∠CDA (opposite angles in a parallelogram),
   side AC = side CA (common sides), and
   ∠BCA = ∠DAC (alternates angles),
   △ABC ≅ △CDA (AAS).

8. a) Construct any parallelogram ABCD.

b) Construct diagonal AC. Measure the side lengths of $\triangle$ABC and $\triangle$CDA to verify that the triangles are congruent. Drag the vertices of parallelogram ABCD to verify that the relationship holds true for any parallelogram.

9. $m_{DE} = \frac{4}{5}$, $m_{FG} = \frac{4}{5}$

Since $m_{DE} = m_{FG}$, DE is parallel to FG.

$m_{EF} = -\frac{1}{4}$, $m_{DG} = -\frac{1}{4}$

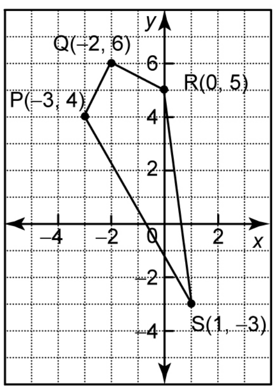
Since $m_{EF} = m_{DG}$, EF is parallel to DG.

DE = $\sqrt{41}$, FG = $\sqrt{41}$, EF = $\sqrt{17}$, DG = $\sqrt{17}$

Since DE = FG, EF = DG, and the opposite sides are parallel, quadrilateral DEFG is a parallelogram.

10. Opposite sides are parallel (two have slope 0 and two have slope $-\frac{4}{3}$) and all sides have length 5, so PQRS is a rhombus.

11. a)



b) Quadrilateral PQRS is a kite.

PQ = $\sqrt{5}$, QR = $\sqrt{5}$, RS = $\sqrt{65}$, SP = $\sqrt{65}$

diagonal PR = $\sqrt{10}$, diagonal QR = $\sqrt{90}$

Since PQ = QR and PS = SP, and the diagonals are not equal in length, the quadrilateral is a kite.

c) Answers may vary. For example: The slope of diagonal PR is $m_{PR} = \frac{1}{3}$ and the slope of diagonal QS is $m_{QS} = -3$.

Since $m_{PR} \times m_{QS} = -1$, the diagonals of the kite are perpendicular to each other.

12. a) Opposite sides are parallel (two have slope $\frac{3}{2}$ and two have slope $-\frac{2}{3}$). Adjacent sides are perpendicular and all sides have length $\sqrt{13}$. Thus, KLMN is a square.

b) The midpoints of the diagonals coincide at $\left(-\frac{1}{2}, \frac{3}{2}\right)$, so the diagonals bisect each other. One diagonal has slope $\frac{1}{5}$ and the other has slope –5. The diagonals are perpendicular.

13. a) **L.S.** $= x^2 + y^2$ **R.S.** $= 25$

$= (-4)^2 + (-3)^2$

$= 16 + 9$

$= 25$

L.S. = R.S.

L.S. $= x^2 + y^2$ **R.S.** $= 25$

$= 4^2 + 3^2$

$= 16 + 9$

$= 25$

L.S. = R.S.

Since the points X(–4, –3) and Y(4, 3) both satisfy the equation, they are on the circle. The radius of the circle $x^2 + y^2 = 25$ is $r = 5$. Since XY = 10, which is double the radius, XY must be a diameter of the circle.

b) Answers may vary. For example: Z(–3, 4) is another point on the circle.

c) XZ = $\sqrt{50}$, YZ = $\sqrt{50}$, and XY = 10.

$$XZ^2 + YZ^2 = (\sqrt{50})^2 + (\sqrt{50})^2$$
$$= 50 + 50$$
$$= 100$$
$$= 10^2$$
$$= XY^2$$

These lengths satisfy the Pythagorean theorem with XY as the hypotenuse, so the triangle is a right triangle.

14. a) Since $(-2)^2 + (5)^2 = 29$ and $(5)^2 + (-2)^2 = 29$, both points are on the circle.

b) The midpoint of DE is $M\left(\frac{3}{2}, \frac{3}{2}\right)$ and the slope of DE is –1. The slope of the perpendicular bisector of DE is $m = 1$. Therefore, the equation of the perpendicular bisector of DE is $y = x$, which also passes through the centre of the circle, (0, 0).

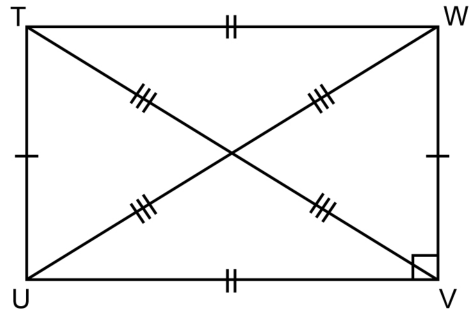
15. (–4, 3)

16. Answers may vary. For example: Construct line segments PQ and QR. Construct the right bisectors of PQ and QR. Construct the point of intersection of the right bisectors, and display its coordinates.

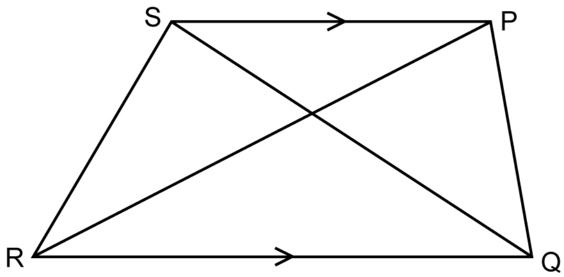
Chapter 3 Practice Test

1. C
2. A
3. D
4. C
5. C

6. a) Diagrams may vary. For example:



b) Diagrams may vary. For example:



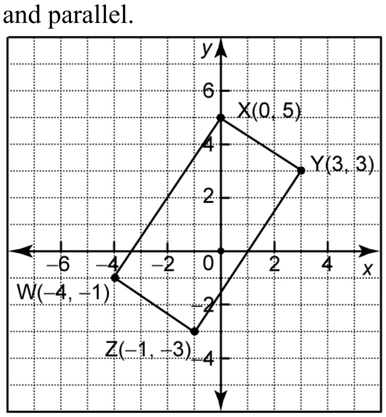
7. a) DE = $4\sqrt{5}$, DF = $4\sqrt{5}$, EF = $4\sqrt{2}$
Since DE = DF, the triangle is isosceles.

b) The midpoint of EF is M(2, 3). Since △DEF is isosceles, the altitude passes through the midpoint of the opposite side, so the point M(2, 3) lies on the altitude of △DEF from vertex D.

8. a) JK = $\sqrt{13}$, LM = $\sqrt{13}$, KL = $\sqrt{26}$, JM = $\sqrt{26}$,
$m_{JK} = \frac{3}{2}$, $m_{LM} = \frac{3}{2}$, $m_{KL} = -\frac{1}{5}$, $m_{JM} = -\frac{1}{5}$
Since $m_{JK} = m_{LM}$, JK is parallel to LM.
Since $m_{KL} = m_{JM}$, KL is parallel to JM.
Since JK = LM, KL = JM, JK is parallel to LM, and KL is parallel to JM, quadrilateral JKLM is a parallelogram.

b) Answers may vary. For example: Construct quadrilateral JKLM. Measure the lengths and slopes of the sides to verify that opposite sides are equal and parallel.

9. a)



b) WX = $2\sqrt{13}$, XY = $\sqrt{13}$, YZ = $2\sqrt{13}$, WZ = $\sqrt{13}$
$m_{WX} = \frac{3}{2}$, $m_{XY} = -\frac{2}{3}$, $m_{YZ} = \frac{3}{2}$, $m_{ZW} = -\frac{2}{3}$
Since $m_{WX} \times m_{XY} = -1$, ∠WXY = 90°.
Since $m_{XY} \times m_{YZ} = -1$, ∠XYZ = 90°.
Since $m_{YZ} \times m_{ZW} = -1$, ∠YZW = 90°.
Since $m_{ZW} \times m_{WX} = -1$, ∠ZWX = 90°.
Since WX = YZ and XY = WZ and the triangle has four 90° angles, the quadrilateral is a rectangle.

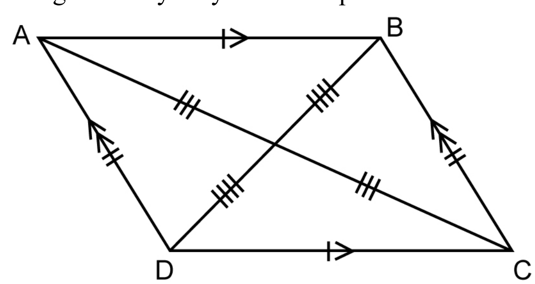
c) The midpoint of diagonal WY is $M\left(-\frac{1}{2}, 1\right)$ and the midpoint of diagonal XZ is $N\left(-\frac{1}{2}, 1\right)$. Since the midpoints of the diagonals are the same, the diagonals of quadrilateral WXYZ bisect each other.

10. a) CD = 5, CE = 5, CF = 5
Since CD = CE = CF, C(−1, 1) is the centre of the circle that passes through the points D(2, 5), E(3, −2), and F(2, −3).

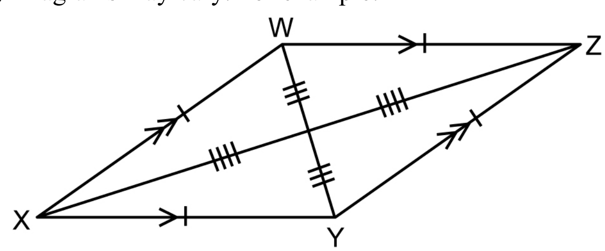
b) 5

Chapter 3 Test

1. B
2. C
3. A
4. B
5. D
6. a) Diagrams may vary. For example:



b) Diagrams may vary. For example:



7. a) $m_{PQ} = 2$, $m_{QR} = -\frac{1}{2}$, $m_{QR} = -\frac{4}{3}$

Since $m_{PQ} \times m_{QR} = -1$, △PQR is a right triangle.

b) The altitude from Q is contained in the line with equation $y = \frac{3}{4}x + \frac{13}{4}$. The point A(1, 4) lies on this line. Thus, A(1, 4) lies on the line containing the altitude.

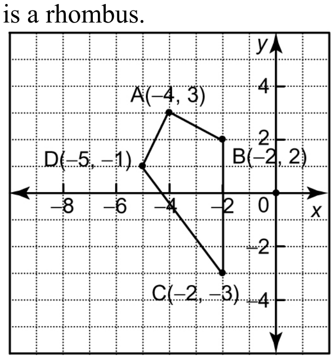
8. a) JK = 5, KL = 5, LM = 5, JM = 5

$m_{JK} = \frac{4}{3}$, $m_{KL} = 0$, $m_{LM} = \frac{4}{3}$, $m_{JM} = 0$

Since $m_{JK} = m_{LM}$, JK is parallel to LM.
Since $m_{KL} = m_{JM}$, KL is parallel to JM.
Since the opposite sides are parallel and all four sides are equal in length, quadrilateral JKLM is a rhombus.

b) Answers may vary. For example: Construct quadrilateral JKLM. Measure the lengths and slopes of the sides. Since all four sides are equal in length and opposite sides are parallel, quadrilateral JKLM is a rhombus.

9. a)



b) AB = $\sqrt{5}$, AD = $\sqrt{5}$, CD = 5, CB = 5

AC = $2\sqrt{10}$, DB = $\sqrt{10}$

Since AB = AC and CD = CB, and AC ≠ DB, the quadrilateral is a kite.

c) $m_{AC} = -3$, $m_{DB} = \frac{1}{3}$

Since $m_{AC} \times m_{BD} = -1$, the diagonals of quadrilateral ABCD intersect at right angles.

10. a) **L.S.** $= x^2 + y^2$ **R.S.** = 625

$= (-24)^2 + 7^2$
$= 576 + 49$
$= 625$

L.S. = R.S.

L.S. $= x^2 + y^2$ **R.S.** = 625

$= 24^2 + (-7)^2$
$= 576 + 49$
$= 625$

L.S. = R.S.

Since the coordinates of D(–24, 7) and M(24, –7) both satisfy the equation, they are on the circle. The radius of the circle $x^2 + y^2 = 625$ is $r = 25$. Since DM = 50, which is double the radius, DM must be a diameter of the circle.

b) Answers may vary. For example: C(7, 24) is another point on the circle.

DC = $25\sqrt{2}$, MC = $25\sqrt{2}$, DM = 50

$$\begin{aligned} AC^2 + BC^2 &= (25\sqrt{2})^2 + (25\sqrt{2})^2 \\ &= 1250 + 1250 \\ &= 2500 \\ &= 50^2 \\ &= DM^2 \end{aligned}$$

These lengths satisfy the Pythagorean theorem with DM as the hypotenuse, so the triangle is a right triangle.