Multiple-choice section

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Answer | A | D | C | B | C | A | B | D |

Question 1 [8.2]

A

The other two angles will be of equal size.

180° – 86° = 94°

94° ÷ 2 = 47°

Question 2 [8.2]

D

*x* + 60° + 80° + 80° = 360°

*x* + 220° = 360°

*x* = 140°

Question 3 [8.2]

C

*a* + 53° = 111°

*a* = 58°

Question 4 [8.2]

B

180° – 40° = 140° (angles on a straight line add to 180°)

∠*SQR* ÷ 2 = ∠*TQR*

140° ÷ 2 = 70°

∠*TQR* = 70°

Question 5 [8.1]

C

Intersects two or more other lines.

Question 6 [8.4]

A

ASA: Angle Side Angle

Question 7 [8.5]

B

The two angles between sides of different lengths are equal.

Another angle must be 94°.

Question 8 [8.5]

D

∠*QPS* = ∠*QPO* + ∠*SPO*

∠*QPS* = 55° + 52°

= 107°

Opposite angles in a rhombus are equal, so ∠*QPS* = ∠*QRS*

∠*QRS* = 107°

Multiple-choice total marks: 8

Short answer section

Question 9 2 marks [8.3, 8.5]

(a) A quadrilateral can be divided into two *triangles* with a diagonal line.

(b) Another name for a slide is a *translation*.

Question 10 2 marks [8.3]

If one figure can be placed on top of another, so that every side, angle and vertex matches, then the two figures are congruent. The symbol  is used to state one figure is congruent to another.

Question 11 2 marks [8.1]

(a) 67° and 23°   
67° + 23° = 90° (complementary angles add to 90°)

(b) 5° and 175°  
5° + 175° = 180° (supplementary angles add to 180°)

Question 12 4 marks [8.1]

(a) 360° – 225° = *x*   
*x* = 135° (angles in a revolution)

(b) 77.7° + 58.8° + *x* = 360°  
360° – 136.5° = *x*   
*x* = 223.5° (angles at a point)

Question 13 2 marks [8.4]

∆*PRS* ≡ ∆*PTS*

∆*PQR*  ∆*SQT*

∆*PQT*  ∆*SQR*

∆*TPR*  ∆*RST*

Question 14 6 marks [8.1]

*AB**CD*

*a* + 55° = 180°

*a* = 125° (co-interior angles on parallel lines)

*b* = 55° (alternate angles on parallel lines)

*c* + 55° = 180°

*c* = 125° (supplementary angles add to 180°)

Question 15 3 marks [8.1]

Let *x* represent the size of the smaller angle.

2*x* + 40° = 180°

2*x* = 140°

*x* = 70°

*a* is 40° larger than *b*, *a* = 70 + 40 = 110°

*b* = 70°

Question 16 4 marks [8.2]

3*x* + 57° = 180°

3*x* = 123°

*x* = 41° (supplementary angles add to 180°)

*y* + 123° + 15° = 180°

*y* + 138° = 180

*y* = 42° (angle sum of a triangle)

Question 17 2 marks [8.2]

*x* + 20° + *x* – 10° + 90° = 180°

2*x* + 100° = 180°

2*x* = 80°

*x* = 40° (angle sum of a triangle)

Question 18 6 marks [8.2]

2*a* + 5° = 75°

2*a* = 70°

*a* = 35° (opposite angles in a parallelogram are equal)

*b*° = 180° – 75° = 105° (co-interior angles on parallel lines add to 180°)

5*c* + 15° = 105°

*c* = 18° (opposite angles in a parallelogram are equal)

Question 19 4 marks [8.2]

(a) An octagon has 8 sides, *n* = 8

(8 – 2) × 180° = 6 × 180° = 1080°

(b) A pentagon has 5 sides, *n* = 5

(5 – 2) × 180° = 3 × 180°

Angle sum of a pentagon is 540°.

540 ÷ 5 = 108°

Question 20 3 marks [8.2]

Let *x* represent the supplementary angle and *y* represent the other base angle in the isosceles triangle.

180° – 115° = *x*

*x* = 65° (supplementary angles add to 180°)

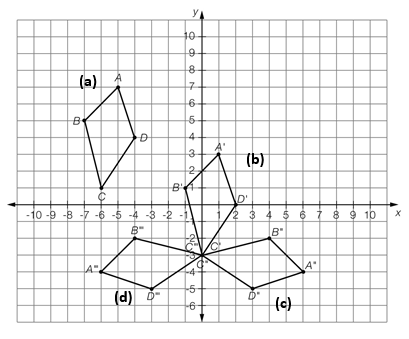
*y* = 65° (base angles in an isosceles triangle are equal)

*Q* = 180° – (65° + 65°)

*Q* = 50° (angle sum of a triangle)

Question 21 8 marks [8.3]

(a)–(d) *A*'''(-6, -4), *B*'''(-4, -2), *C*'''(0, -3), *D*'''(-3, -5)



Question 22 2 marks [8.3]

*x* = 5 m

*y* = 116°

Question 23 3 marks [8.4]

∆*ABC* is congruent to ∆*PRS*, so need to prove that ∆*PQR* is congruent to ∆*PRS*.

*PR* is common (Side)

∠*PRS* = ∠*PRQ* = 90° (Angle)

*QR* = *RS*, as *R* is the midpoint of the line *QS* (Side)

So, ∆*PQR* is congruent to ∆*PRS* (SAS)

∆*ABC* is congruent to ∆*PRS* (given)

∆*ABC* is congruent to ∆*PQR*

Question 24 3 marks [8.4]

(a) *AB* = *EF*; *AC* = *DF*; *BC* = *DE*∆*ABC*  ∆*DEF*Side, Side, Side, (SSS)

(b) In ∆*ABC*∠*BAC* = 42° (given)  
∠*BAC* = ∠*EFD*∠*EFD* = 42°

Question 25 2 marks [8.5]

Left and right triangles are congruent and are isosceles triangles.

Top and bottom triangles are congruent and are isosceles triangles.

*x* = 68° (base angle of an isosceles triangle)

Short answer total marks: 58

Extended answer section

Question 26 3 marks [8.5]

Diagonals in rectangles are equal.

*XZ* = 50 cm = *WY*

*WY* = *WV* + *VY*

50 = (*x* + 8) + (*x* + 8)

50 = 2*x* + 16

34 = 2*x*

*x* = 17

Question 27 5 marks [8.2]

(a) *a* = 79° (corresponding angles on parallel lines)  
*b* = 68° (alternate angles on parallel lines)  
*c* = 180° – 79°  
*c* = 101° (supplementary angles add to 180°)  
∠*HIE* = 180° – 79°  
∠*HIE* = 101°   
or  
vertically opposite angles to ∠*FID*

(b) ∠*BEI* (corresponding angles on parallel lines)

(c) 79° + 68° + 101° + *x* = 360°  
248° + *x* = 360°  
*x* = 112°

Question 28 5 marks [8.2]

*a* = 180° – (60° + 35°)

*a* = 85° (angle sum of a triangle)

*b* = 85° (vertically opposite angles)

*d* = 35° (alternate angles on parallel lines are equal)

*c* = 180° – (85° + 35°)

*c* = 60° (angle sum of a triangle)

*e* = 180° – 85°

*e* = 95° (supplementary angles add to 180°)

Extended answer total marks: 13

TOTAL test marks: 79