

Page 195 • EXPLORATIONS

trapezoid; The seg. that joins the midpts. of 2 sides of a \triangle is \parallel to the third side; \square ; (same as above)

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1. \square 2. trapezoid 3. rectangle 4. square 5. 11 6. 17; 67

7. Statements

Reasons

1. $\angle 1 \cong \angle 2 \cong \angle 3 \cong \angle 4$

2. $\overline{HG} \parallel \overline{EF}; \overline{HE} \parallel \overline{GF}$

3. $EFGH$ is a \square .

4. $\overline{HG} \cong \overline{HE}$

5. $HGFE$ is a rhombus.

1. Given

2. If 2 lines are cut by a trans. and alt. int. \angle s are \cong , then the lines are \parallel .

3. Def. of \square

4. If 2 \angle s of a \triangle are \cong , then the sides opp. those \angle s are \cong .

5. If 2 consec. sides of a \square are \cong , then the \square is a rhombus.

8. a. \square

b.

Statements

Reasons

1. $PQRS$ is a \square .

2. $\overline{PQ} \parallel \overline{SR}$

3. X is the midpt. of \overline{PQ} ;
 Y is the midpt. of \overline{SR} .

4. $XQ = \frac{1}{2}PQ; YR = \frac{1}{2}SR$

5. $\overline{PQ} \cong \overline{SR}$ or $PQ = SR$

6. $\frac{1}{2}PQ = \frac{1}{2}SR$

7. $XQ = YR$

8. $XQRY$ is a \square .

1. Given

2. Def. of \square

3. Given

4. Midpt. Thm.

5. Opp. sides of a \square are \cong .

6. Mult. Prop. of =

7. Substitution Prop.

8. If one pair of opp. sides of a quad. are both \cong and \parallel , then the quad. is a \square .

c. trapezoid

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- 110 2. 38 3. 28 4. 6 5. $GS = 5$ or $\overline{SA} \parallel \overline{GN}$ 6. $\angle SAN \cong \angle SGN$
 $\overline{AZ} \cong \overline{GZ}$ 8. $GN = 17$ or $\overline{GS} \parallel \overline{NA}$

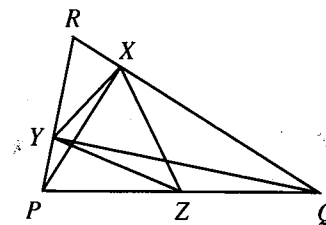
9. A line that contains the midpt. of one side of a \triangle and is \parallel to another side passes through the midpt. of the third side.
10. The seg. that joins the midpts. of 2 sides of a \triangle is \parallel to the third side.
11. The seg. that joins the midpts. of 2 sides of a \triangle is half as long as the third side.

| Statements | Reasons |
|--|--|
| 1. $CDEF$ is a \square . | 1. Given |
| 2. $\overline{FE} \parallel \overline{CD}$ | 2. Def. of \square |
| 3. $\overline{FE} \parallel \overline{CR}$ and $\overline{FS} \parallel \overline{DR}$ | 3. $\overline{FE} \parallel \overline{CD}$ |
| 4. S and T are midpts. of \overline{EF} and \overline{ED} . | 4. Given |
| 5. $\overline{SR} \parallel \overline{FD}$ | 5. The seg. that joins the midpts. of 2 sides of a \triangle is \parallel to the third side. |
| 6. $FSRD$ is a \square . | 6. Def. of \square |
| 7. $\overline{SR} \cong \overline{FD}$ | 7. Opp. sides of a \square are \cong . |

13. \square 14. rhombus 15. rectangle 16. square

| Statements | Reasons |
|---|--|
| 1. $ABCD$ is a rhombus. | 1. Given |
| 2. $DO = BO; AO = CO$ | 2. Diags. of a \square bis. each other. |
| 3. $DO = DE + EO; BO = BF + FO$ | 3. Seg. Add. Post. |
| 4. $DE + EO = BF + FO$ | 4. Substitution Prop. |
| 5. $DE = BF$ | 5. Given |
| 6. $EO = FO$ | 6. Subtr. Prop. of = |
| 7. $AECF$ is a \square . | 7. If the diags. of a quad. bis. each other, then the quad. is a \square . |
| 8. $\overline{BD} \perp \overline{AC}$ | 8. Diags. of a rhombus are \perp . |
| 9. $\angle COE \cong \angle COF$ | 9. If 2 lines are \perp , then they form \cong adj. \sphericalangle . |
| 10. $\overline{CO} \cong \overline{CO}$ | 10. Refl. Prop. |
| 11. $\triangle COE \cong \triangle COF$ | 11. SAS Post. |
| 12. $\overline{CE} \cong \overline{CF}$ | 12. Corr. parts of $\cong \triangle$ are \cong . |
| 13. $AECF$ is a rhombus. | 13. If 2 consec. sides of a \square are \cong , then the \square is a rhombus. |

18. Given: \overline{PX} and \overline{QY} are altitudes of $\triangle PQR$;
 Z is the midpt. of \overline{PQ} .
 Prove: $\triangle XYZ$ is isos.



| Statements | Reasons |
|---|--|
| 1. \overline{PX} and \overline{QY} are altitudes. | 1. Given |
| 2. $\overline{PX} \perp \overline{RQ}; \overline{QY} \perp \overline{PR}$ | 2. Def. of altitude |
| 3. $\angle PXQ$ and $\angle PYQ$ are rt. \sphericalangle . | 3. Def. of \perp lines |
| 4. $\triangle PXQ$ and $\triangle PYQ$ are rt. \triangle . | 4. Def. of rt. \triangle |
| 5. Z is the midpt. of \overline{PQ} . | 5. Given |
| 6. $XZ = PZ$ or $\overline{XZ} \cong \overline{PZ}$; $PZ = YZ$ or $\overline{PZ} \cong \overline{YZ}$ | 6. The midpt. of the hypotenuse of a rt. \triangle is equidistant from the 3 vertices. |
| 7. $\overline{XZ} \cong \overline{YZ}$ | 7. Trans. Prop. |
| 8. $\triangle XYZ$ is isos. | 8. Def. of isos. \triangle |

19. $\overline{ZO}, \overline{DI}$ 20. 14 21. 4 22. 100

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1. always 2. sometimes 3. sometimes 4. always 5. sometimes 6. never
7. always 8. sometimes 9. 28 10. 4.5 11. $7j + 2k$
12. Yes; if both pairs of opp. \sphericalangle of a quad. are \cong , then the quad. is a \square .
13. Yes; if one pair of opp. sides of a quad. are both \cong and \parallel , then the quad. is a \square .
14. Yes; if the diags. of a quad. bisect each other, then the quad. is a \square .
15. Yes; if both pairs of opp. sides of a quad. are \cong , then the quad. is a \square .
16. 14; 15; 26
17. $5x - 4 = 3(x + 4), x = 8; 6y + 2 = 2y^2 - 6, y = 4; z = \frac{1}{2}(54 + 30) = 42$

| Statements | Reasons |
|---|--|
| 1. $PQRS$ is a \square . | 1. Given |
| 2. $\overline{PS} \cong \overline{QR}$ | 2. Opp. sides of a \square are \cong . |
| 3. $\angle P \cong \angle R$ | 3. Opp. \sphericalangle of a \square are \cong . |
| 4. $PA = RB$ or $\overline{PA} \cong \overline{RB}$ | 4. Given |
| 5. $\triangle PAS \cong \triangle RBQ$ | 5. SAS Post. |
| 6. $\overline{AS} \cong \overline{BQ}$ or $AS = BQ$ | 6. Corr. parts of $\cong \triangle$ are \cong . |

19. Statements

Reasons

| | |
|---|---|
| 1. $\overline{PR} \parallel \overline{VO}; \overline{RO} \parallel \overline{PV}$ | 1. Given |
| 2. $PROV$ is a \square . | 2. Def. of \square |
| 3. $\overline{PR} \cong \overline{RO}$ | 3. Given |
| 4. $PROV$ is a rhombus. | 4. If 2 consec. sides of a \square are \cong , then the \square is a rhombus. |
| 5. $\overline{RE} \cong \overline{EV}$ | 5. The diags. of a \square bis. each other. |
| 6. $\overline{EO} \cong \overline{EO}$ | 6. Refl. Prop. |
| 7. $\overline{RO} \cong \overline{VO}$ | 7. Def. of rhombus |
| 8. $\triangle ROE \cong \triangle VOE$ | 8. SSS Post. |
| 9. $\overline{OE} \perp \overline{RV}$ | 9. The diags. of a rhombus are \perp . |
| 10. $\angle VEO$ is a rt. \angle . | 10. Def. of \perp lines |
| 11. $\triangle VEO$ is a rt. \triangle . | 11. Def. of rt. \triangle |
| 12. $\angle 1$ and $\angle VOE$ are comp. | 12. The acute \angle s of a rt. \triangle are comp. |
| 13. $m\angle 1 + m\angle VOE = 90$ | 13. Def. of comp. \angle s |
| 14. $\angle 2 \cong \angle VOE$ or $m\angle 2 = m\angle VOE$ | 14. Corr. parts of $\cong \triangle$ are \cong . |
| 15. $m\angle 1 + m\angle 2 = 90$ | 15. Substitution Prop. |
| 16. $\angle 1$ and $\angle 2$ are comp. | 16. Def. of comp. \angle s |

Pages 200-201 • CUMULATIVE REVIEW: CHAPTERS 1-5

- A
- one
 - a. yes; skew lines b. no
 - If you enjoy winter weather, then you are a member of the skiing club.
 - 1
 - Trans. Prop.
 - 180; The sum of the meas. of the \angle s of a \triangle is 180. 7. 180; \angle Add. Post.
 - 5; The meas. of an ext. \angle of a \triangle equals the sum of the meas. of the 2 remote int. \angle s.
 - $\angle 1$; If 2 \parallel lines are cut by a trans., then corr. \angle s are \cong .
 - \overline{EB} ; If 2 \angle s of a \triangle are \cong , then the sides opp. those \angle s are \cong .
 - bisects; \perp 12. a. A and B b. \overrightarrow{SR} and \overrightarrow{ST}
 - a. $\triangle RTA$ b. \overline{DB} c. $m\angle E$ 14. $\frac{38(180)}{40} = 171$ 15. 150, 150
- B
- $2x + 7 = 4x - 1; 2x = 8; x = 4; SU = 2(4) + 7 = 15; UN = 4(4) - 1 = 15; SN = 3(4) + 4 = 16$
 - $MN = \frac{1}{2}(2r + s) + (4r - 3s) = \frac{1}{2}(6r - 2s) = 3r - s$
 - median 19. bisector 20. isos.
 - $m\angle DAC + 2m\angle ADC = 180, 36 + 2m\angle ADC = 180, 2m\angle ADC = 144, m\angle ADC = 72; m\angle ADF = \frac{1}{2}(72) = 36$